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USAF TERRESTRIAL ENERGY STUDY
Volume III, Part 1 — Summary Data Display

MAY 1978



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AIR FORCE AERO PROPULSION LABORATORY AIR FORCE SYSTEMS COMMAND WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

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Section I of this report was accomplished by the Energy Conversion Branch Aerospace Power Division, Air Force Aero Propulsion Laboratory. Lt. David C. Hall is technically responsible for the work.

Section II of this report was submitted by Burns & Roe, Inc., under Contract F33615-77-C-3159. The effort was sponsored by the Air Force Aero Propulsion Laboratory, Air Force Systems Command, Wright-Patterson AFB, Ohio, under Project 3145, Task 23, and Work Unit 12 with Lt. David C. Hall as Project Engineer. Dr. A. Carlson of Burns & Roe was technically responsible for the work.

This report has been reviewed by the Information Office, (ASD/OIP) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

David C. Hall, Lt, USAF

Project Engineer

Robert R Barthelenny

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20. (cont) which utilize electric power for recharging. Each system is characterized in terms of a set of economic, physical and performance parameters including acquisition costs, life cycle costs, size, efficiency and environmental constraints. A total of eighteen such parameters are presented for each type of system for several sets of requirements. The requirements are defined in terms of electric power level, voltage level, frequency and duration of operation corresponding to typical U.S. Air Force ground applications. And the state of t

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FOREWORD

This is the final Technical Report on the USAF Terrestrial Energy Study conducted by the Energy Conversion Branch, Aerospace Power Division. The effort was jointly sponsored by the Power Systems Division, U.S. Department of Energy, and the Aerospace Power Division, Air Force Aero Propulsion Laboratory, Air Force Systems Command, Wright Patterson AFB, Ohio under Interagency Agreement #1013. The work herein was accomplished under Project 3145, Task 23, Work Unit Number 12. Lt David C. Hall, AFAPL/POE, is the responsible project officer. The work was accomplished by Burns & Roe, Inc. Woodbury, NY.

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SECTION I

INTRODUCTION

This report details over two years of work by the Energy Conversion Branch, Aerospace Power Division, on USAF terrestrial energy requirements and possible methods of satisfying those requirements. Our main objective was to determine how the USAF could achieve the most efficient terrestrial energy use state possible, both in terms of resources and mission impact. In order to fully meet this objective, the governing parameters of the study were formulated considering not only the technology options, but also practical areas of logistics, utilization, maintenance, and management.

This report is in three sections plus an Executive Summary. The first section describes the USAF terrestrial energy requirements, both base level and lower. The second section indicates the energy conversion technology that is applicable to USAF needs and includes a comprehensive data base on all these technologies. The third section gives a breakdown of the technologies most generally useful to the USAF and a preliminary estimate of their amount of potential, both in numbers of units and energy savings.

SECTION II

USE OF THE REPORT

This Volume contains the Summary Data Display which presents the data in a format which enables the user to make a rapid comparison of the energy conversion system alternatives for each of the sets of electric power requirements. The data included in this volume are also included in Volume I, the Energy Conversion Systems Handbook. Table I contains a list of the types of energy conversion systems included in this report and indicates the power levels for which each system is considered. Brief descriptions of each of the energy conversion systems are included in Volume I. Table II is a list of the parameters for which charts are presented in each chapter of the Summary data display. Detailed definitions of each of the parameters are given in Volume I. Table III is a list of the power requirements which have been established by the U. S. Air Force. Definitions of the power requirements are given in Volume I.

The Summary Data Display is subdivided into seventeen chapters: one chapter for each of the requirements listed in Table III. Each chapter contains a set of charts which show the values (quantitative or qualitative) of the parameters. There is one chart for each of the parameters. Two types of charts are included according to whether the parameters are qualitative or quantitative. The data for the qualitative parameters (Nos. 7, 8, 9, 11, 13, 14 and 17) are presented in the form in which they were presented in Volume I and the reader is referred to Volume I for an explanation of meanings of the qualitative data. The data for the quantitative parameters (Nos. 1, 2A, 2B, 3, 4A, 4B, 5, 6A, 6B, 10, 12, 15 and 16) are presented in the form of bar charts.

TABLE 1

TYPES OF ENERGY CONVERSION SYSTEMS
AND CORRESPONDING ELECTRICAL POWER LEVELS

CALL STREET					_	_	-	-						_									100	
	10 kw	×		×	×	×			×		51	×					×		×	×	×	×	×	×
ELS	50 kw	×		×	×	×			×			×			×	×			×	×	×	×	×	×
OWER LEV	250 kw	×		×	×	×			×	16	5	×		ia ///	×	×	A		×	×	×	×	100	169
ELECTRICAL POWER LEVELS	750 kw	×		×	×	×	×		×			×			×	×			×	×	×	×		169 269 169
ELECT	10 Mw	×	×	×		×	×	×	×	×			×	T.		×	A STATE OF THE STA	×		×	×	×	×	×
	50 MW	×	×	70	1	×	×	×		×	×	17 5	×	×		×		×		×	×		×	×
129	Energy Conversion System	Gas Turbine Generator (simple cycle)	Gas Turbine Generator (regenerative)	Diesel Engine Generator	Spark Ignition Engine Generator	Fuel Cell - Phosphoric Acid	Steam Turbine Generator (coal fired)	Steam Turbine Generator (oil/gas fired)	Stirling Engine Generator	MilD Generator	MID/Steam Generator	Thermionic Generator	Thermionic/Steam Generator	Steam Turbine Generator (PWR)	Organic Vapor Turbine Generator	Gas Turbine Generator (closed cycle)	Gas Turbine Generator (closed cycle)	Steam Turbine Generator	Organic Vapor Turbine Generator	Gas Turbine Generator	Photovoltaic System	Wind Turbine Generator	Flywheel Storage	Battery Storage
	Energy Source	Chemical	Chemical	Chemical	Chemical	Chemical	Chemical	Chemical	8) Chemical	Chemical	Chemical	Chemica1	Chemical	Nuclear	Nuclear	Nuclear	Radioisotope	Solar	Solar	Solar	Solar	Wind	20) External	External

TABLE 2 LIST OF PARAMETERS

- Parameter 1. Acquistion Cost (1977 dollars)
- Parameter 2A. Life Cycle Cost (1977 dollars)
- Parameter 2B. Life Cycle Cost/Year
- Parameter 3. Lifetime
- Parameter 4A. Volume
- Parameter 4B. Area
- Parameter 5. Weight
- Parameter 6A. Fuel Amount/Year
- Parameter 6B. Fuel Cost/Year
- Parameter 7. Environmental Constraints
- Parameter 8. Location Constraints
- Parameter 9. Operational Constraints
- Parameter 10. System Efficiency
- Parameter 11. Type of System
- Parameter 12. Start-up/Shut-down Times
- Parameter 13. Growth Potential
- Parameter 14. Reliability
- Parameter 15. Maintenance and Operation
- Parameter 16. Other Energy Production
- Parameter 17. Availability of Raw Building Materials

TABLE 3

U.S. AIR FORCE GROUND POWER
REQUIREMENTS INCLUDED IN REPORT

	Power Level	Operating Mode	Frequency/Phase	Voltage Level
1.	50 MW	Continuous	60 Hz/3Ø	13.8 kv
2.	50 Mw	1 hour per day	60 Hz/3Ø	13.8 kv
3.	10 MW	Continuous	60 Hz/3Ø	4160 V
4.	10 MW	8 hours per day	60 Hz/3Ø	4160 V
5.	10 MW	1 hour per day	60 Hz/3Ø	4160 V
6.	750 kw	Continuous	60 Hz/3Ø	4160 V
7.	250 kw	Continuous	60 Hz/3Ø	480 V
8.	50 kw	Continuous	60 Hz/3Ø	480 V
9.	50 kw	8 hours per day	60 Hz/3Ø	480 V
10.	50 kw	1 hour per day	60 Hz/3Ø	480 V
11.	10 kw	Continuous	DC	28 V
12.	10 kw	Continuous	60 Hz/3Ø	240 V
13.	10 kw	Continuous	60 Hz/1Ø	240 V
14.	10 kw	Continuous	60 Hz/1Ø	120 V
15.	10 kw	8 hours per day	DC stone and assist	28 V
16.	10 kw	8 hours per day	60 Hz/3Ø	240 V
	10 kw	1 hour per day	60 Hz/3Ø	240 V

SECTION AND PROPERTY.

On each bar chart, the requirement and the parameter in question are stated at the bottom of the chart. The scale varies from chart to chart and is indicated at the top of each chart. The energy conversion systems are shown in a column at the left side of each chart. The abbreviations employed in the names of the systems are defined in Table IV. There is one bar for each system considered to be appropriate for the indicated requirement and parameter. If no bar is shown for a given system, this means that the system was not considered to be suitable for the indicated requirement and parameter.

The years for which the data are established for each system are shown under each bar. For example, if the data for a particular system are established for the years 1977, 1985 and 1990, then the notation A)77 B)85 C)90 would appear under the bar for that system. The bar itself will then, in general, contain the letters A, B and C to indicate the values of the parameter in question for each of the three designated years. However, since each bar is composed of finite segments or boxes, it is possible for the data for more than one of the designated years to fall within the same segment. When this occurs, a code is employed to indicate which of the dates falls into a particular segment.

The code is summarized in Table V and works in the following manner. If the data for the first and second years fall into one segment, the letter "D" appears in that segment and the letter "C" appears in the segment corresponding to the data for the third year. If the data for the

TABLE 4

ABBREVIATIONS EMPLOYED IN NAMES OF ENERGY CONVERSION SYSTEMS IN SUMMARY DATA DISPLAY CHARTS

TURB = Turbine

GEN = Generator

SC = Simple Cycle

RC = Regenerative Cycle

IGN = Ignition

ENG = Engine

PHOS = Phosphoric

MHD = Magnetohydrodynamic

VAP | Vapor

150 - E. T. C.

TABLE 5

ABBREVIATIONS EMPLOYED IN BAR CHARTS FOR PARAMETER NOS. 1, 2A, 2B, 3, 4A, 4B, 5, 6A, 6B, 10, 12, 15 AND 16

Dates of initial system implementation denoted by letters A)__, B)__ and C)__ below each bar.

Example: A)77, B)85, C)90 denotes the initial implementation dates 1977, 1985 and 1990 for a given system.

The letters A, B, C, D, E, F and G may appear as parts of each bar.

ABBREVIATIONS

- 1. The letter A in a bar denotes magnitude of parameter for initial date (e.g., 1977).
- 2. The letter B in a bar denotes magnitude of parameter for second date (e.g., 1985).
- 3. The letter C in a bar denotes magnitude of parameter for third date (e.g., 1990).
- 4. The letter D in a bar denotes magnitude of parameter for first and second dates (e.g., 1977 and 1985).
- 5. The letter E in a bar denotes magnitude of parameter for second and third dates (e.g., 1985 and 1990).
- 6. The letter F in a bar denotes magnitude of parameter for first and third dates (e.g., 1977 and 1990).
- 7. The letter G in a bar denotes magnitude of parameter for all three dates (e.g., 1977, 1985 and 1990).

first and third years fall into one segment, the letter "F" appears in that segment and the letter "B" appears in the segment corresponding to the data for the second year. If the data for the second and third years fall into one segment, the letter "E" appears in that segment and the letter "A" appears in the segment corresponding to the data for the first year. If the data for all three years fall into the same segment, the letter "G" appears in that segment.

In many cases, the range over which the parameters vary for a single bar chart is very large. If the scales of the charts are selected on the basis of fitting the largest bars on the charts, the shortest bars may be too small to discern. For those cases in which the data exhibited by the shortest bars is important, the scale is selected in such a manner that the largest bars may extend beyond the range of the chart. Such excessively long bars are shown extending the full length of the chart and the magnitudes of the parameters are printed under these bars.

LOGIC EXAMPLE

To illustrate the use of this data base, two examples are given. The first example demonstrates the preferred method used in selecting an energy conversion system for a site where reliability and cost are important parameters. The second example demonstrates the preferred method used for a site where low logistics burden (fuel delivery, manpower) is of paramount importance. The site used for both examples is the test range near Nellis AFB, Nevada. The power level chosen is 250 KW continuous.

The method used is as follows:

- Step #1. Establish an appropriate weighting factor for each parameter.
 Use a 0 to 10 scale, with the most important parameters having a factor of 10.
- Step #2. Use the appropriate Summary Data Display charts to determine the top five systems for each parameter. List them in priority order from one to five.
- Step #3. Determine the three systems that are consistently in the six most important parameters.
- Step #4. Using the appropriate Handbook data charts, fill in the quantitative or qualitative numbers for each system.
- Step #5. Combine the weighting factors and the numbers from Step #4 by the equation shown below.

DATA NUMBER x WEIGHTING FACTOR =

Step #6. Add together the results of Step #5 for each parameter to get a total for each system. The system with the lowest total is the "best" system for your particular requirement and site.

This procedure should enable personnel requiring an energy conversion system to establish the best one or two systems for their particular need. Once this is accomplished, a more rigorous design study of the chosen system should be undertaken.

 $\underline{\text{EXAMPLE }\#1}$ - 250 KW continuous system requiring high reliability and low life cycle cost.

Step #1. Establish the appropriate weighting factors for each parameter.

PARAMETER	WEIGHTING FACTOR
Acquisition Cost	6
Life Cycle Cost	10
Lifetime	8
Volume/Size	
Weight	
Fuel	
Environmental Constraints	
Location Constraints	
Operational Constraints	
System Efficiency	
Type System	
Start/Stop Time	0
Growth Potential	
Reliability	
Maintenance and Operation	
Other Energy Production	
Materials Availability	
Development Status	

The reasons for each choice of weighting factor are given below.

Acquisition Cost - W.F. = 6. A higher acquisition cost is acceptable if greater reliability and/or lower LCC is provided.

Life Cycle Cost - W.F. = 10. The system is to provide power at the lowest possible overall cost.

Lifetime - W.F. = 8. The facility to be powered will be a remote site and the power system is to be built into the structure.

Volume/Size - W.F. = 1. The power system is to be permanent. However, the system must be truck transported to the site.

Weight - W.F. = 1. The power system is to be permanently fixed. However, it must be truck transported to the site.

Fuel - W.F. = 7. The necessary fuel for the system must be trucked to the site.

Environmental Constraints - W.F. = 3. Some consideration is to be given to pollution; however, the site is a necessary communications link.

Location Constraints - W.F. = 1. The power system is to be used at only one site. If the system was to be used at numerous sites, this paramater would have a higher weighting factor.

Operational Constraints - W.F. = 8. The power system is to be able to operate unattended for long periods of time.

System Efficiency - W.F. = 3. The system efficiency impacts the amount of fuel used (for fossil fueled systems) or the physical size of the systems (for solar or nuclear systems).

Type System - W.F. = 0. The system is to be fixed. Any of the three systems (mobile, transportable, or fixed) could be used.

Start/Stop Time - W.F. = 0. The system is to be in continuous operation, with emergency backup for unexpected outages.

Growth Potential - W.F. = 4. Some growth of the site is expected and, if possible, the existing power system will be expanded to meet that growth.

Reliability - W.F. = 10. The power system must operate with minimum down time.

Maintenance and Operation - W.F. = 1. This parameter is covered, for this particular case, under the LCC and Operational Constraints parameters.

Other Energy Production - W.F. = 5. A system capable of providing both electrical and thermal energy in the proper proportions would be the most energy efficient.

Materials Availability - W.F. = 0. Only one of this system is necessary. If more were to be built, this parameter would assume greater importance.

Development Status - W.F. = 4. This system is scheduled to be purchased in FY82.

Step #2. Use the appropriate Summary Data Display charts to determine the top five systems for each parameter. List them in priority order from one to five.

PARAMETER

Acquisition Cost

LISTING OF SYSTEMS

- 1. Fuel Cell
- 2. Diesel Engine
 - 3. Spark Ignition Engine
 - 4. Gas Turbine Engine (SC, CF)
 - 5. Wind Turbine (20-5)

Life Cycle Cost

Lifetime

Volume/Size

Weight

Fuel (Use/Year)

Environmental Constraints

Operational Constraints

Location Constraints

LISTING OF SYSTEMS

- 1. Diesel Engine
 2. Fuel Cell
 3. Wind Turbine (20-1)
 4. Gas Turbine Engine (SC, CF)
- 5. Spark Ignition Engine
- 1. Thermionic
- 2. Gas Turbine Engine (SC, CF)
- 3. Solar Turbine
- 4. Fuel Cell
- 5. Diesel Engine
- 1. Diesel Engine
- 2. Spark Ignition Engine
- 3. Fuel Cell
- 4. Gas Turbine Engine (SC, CF)
- 5. Wind Turbine (20-1)
- 1. Gas Turbine Engine (SC,CF)
- 2. Diesel Engine
- 3. Spark Ignition Engine
- 4. Fuel Cell
- 5. Vapor Turbine (NF)
- 1. Wind Turbine
- 2. Photovoltaics
- 3. Solar Turbine
- 4. Fuel Cell
- 5. Diesel Engine
- 1. Fuel Cell
- 2. Photovoltaics
- 3. Wind Turbine
- 4. Radioisotope
- 5. Solar Turbine
- 1. Fuel Cell
- 2. Diesel Engine
- 3. Wind Turbine
 4. Gas Turbine Engine (SC,CF)
 - 5. Spark Ignition Engine
- Fuel Cell
 Diesel Engine
 Gas Turbine Engine (SC, CF)
 Spark Ignition Engine
 Radioisotope

System Efficiency

Type System

Start/Stop Time

Growth Potential

Reliability

Maintenance and Operation

Sulphi morrhoof shapp 5 4. Such fair 5. Velour strike (IM)

Other Energy Production

Building Materials

LISTING OF SYSTEMS

- Fuel Cell
 Diesel Eng Diesel Engine
- 3. Wind Turbine
 4. Gas Turbine H Gas Turbine Engine (SC, CF)
- Spark Ignition Engine
- 1. 2.
- All systems could be used
- 5.
- 1. Diesel Engine
- 2. Gas Turbine Engine (SC, CF)
- Spark Ignition Engine
- 4. Wind Turbine
- 5. Photovoltaics
- 1. Fuel Cell
- 2. Photovoltaics
- 3. Wind Turbine
- 4. Diesel Engine
- 5. Radioisotope
- 1. Fuel Cell
- 2. Diesel Engine
- 3. Spark Ignition Engine
- 4. Gas Turbine Engine (SC, CF)
- 5. Radioisotope
- 1. Fuel Cell
- 2. Diesel Engine
- 3. Gas Turbine Engine (SC, CF)
- 4. Spark Ignition Engine
- 5. Gas Turbine Engine (SC, NF)
- 1. Gas Turbine Engine (SC, CF)
- 2. Spark Ignition Engine
- 3. Solar Turbine
- 4. Vapor Turbine (NF)
- 5. Diesel Generation
- 1. Diesel Engine
- 2. Spark Ignition Engine
- 3. Gas Turbine Engine (SC, CF)
 - 4. Wind Turbine 5. Thermionics

Development

LISTING OF SYSTEMS

- Gas Turbine Engine (SC, CF)
 Diesel Engine
 Spark Ignition Engine
 Fuel Cell
 Wind Turbine

Step #3. Determine the top three systems that consistently show up in the parameters. For this example, the systems are Fuel Cells, Diesel Engines, and Gas Turbine Engines (SC,CF).

Step #4. Using the appropriate Handbook data charts, fill in the quantitative or qualitative data for each system.

PARAMETER	FUEL CELL	DIESEL	GAS TURBINE
Acq. Cost	\$60,000	\$35,000	\$90,000
LCC/Yr.	\$66,400	\$64,700	\$120,200
Lifetime (Yrs)	20	20	29
Volume/Size	300 ft. ³	200 ft. ³	150 ft. ³
Weight	18,800 lb _m	7,100 lb _m	4,500 lb _m
Fuel Use/Yr.		115,000 gal.	210,000 gal.
Environ. Constr.	Therm. Disch.	Therm. Disch. CO,HC, NO, SO Part., Noise	Hi-Temp Therm. Disch.
Location Constr.	Fuel Deliveries	Fuel Deliveries	Fuel Deliveries
Operational Constr.	None on Man	Eff. reduction at part load	Eff. reduction at part load
System Eff. (%)	36.7	30.6	17.5
Type System	Transportable	Mobile	Mobile
Start/Stop Time	3 hrs/45 min	10 sec/10 sec	10 sec/l min.
Growth Potential	Excellent	None	None
Reliability	No moving parts	Moving parts, medium temp., corrosion	Moving parts, high temp., corrosion
Maint. & Operation	\$3373/yr	\$6925/yr	\$6205/yr
Other Energy Prods.	778x10 ³ BTU/hr	1.16x10 ⁶ BTU/hr	2.41x10 ⁶ BTU/hr
Bldg. Matls. Avail.	Platinum		
Development	1980	1977	1977

Step #5. Using the information contained in the chart and the weighting factors established in Step #1, determine the appropriate numbers.

Acq. Cost	Fuel Cell Diesel Gas Turbine	- 1	x W.F. = 12 6 18
LCC/yr	Fuel Cell Diesel Gas Turbine	- 1	x W.F. = 10 30
Lifetime	Fuel Cell Diesel Gas Turbine	- 1	x W.F. = 8 16
Volume/Size	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 3 2 1
Weight	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 2 1
Fuel Use/yr	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 14 21
Envir. Constraints	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 369
Loc. Constraints	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 1 2 2
Oper. Constraints	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 16 16
Sys. Efficiency	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 369
Type System	Fuel Cell Diesel Gas Turbine	- 1/ patro	x W.F. = 0 0
Start-up/Shutdown Time	Fuel Cell Diesel Gas Turbine	- 3 - 1 - 2	x W.F. = 0 0
Growth Potential	Fuel Cell Diesel Gas Turbine	- 1 - 4 - 4	x W.F. = 16 16

Reliability	Fuel Cell Diesel Gas Turbine	- 4	x W.F. = 10 40 40
Maint. & Oper.	Fuel Cell Diesel Gas Turbine	- 3	x W.F. = 3 2
Other Energy Prod.	Fuel Cell Diesel Gas Turbine	- 2	x W.F. = 10 5
Bldg. Matl. Avail.	Fuel Cell Diesel Gas Turbine	- 1	x W.F. = 0 0
Development	Fuel Cell Diesel Gas Turbine	- 0	x W.F. = 0 0

Step #6. Adding together the results of Step #5, one arrives at the following totals:

Fuel Cell - 98
Diesel - 141
Gas Turbine - 186
(SC, CF)

For this particular example, the fuel cell has been determined to be the optimal system. However, this is only a preliminary determination. Each engineer should go into much greater detail before choosing a particular system.

EXAMPLE #2 - 250 KW continuous system requiring a low logistics burden.

Step #1. Establish the appropriate weighting factors for each parameter.

PARAMETER		WEIGHTING FACTOR
Acquisition Cost		5 72000
Life Cycle Cost		5
Lifetime		
Volume/Size		
Weight		
Fue1		
Environmental Constraints	to adicent and thirth	3
Location Constraints		1
Operational Constraints	#	6
System Efficiency		
Type System		0
Start/Stop Time	Sell before unocume	
Growth Potential		4
Reliability		9
Maintenance and Operation		8
Other Energy Production		5
Materials Availability		0
Development Status		4
Th 6	- C	

The reasons for each choice of weighting factor are given below.

Acquisition Cost - W.F. = 5. A higher acquisition cost is acceptable if greater reliability and/or lower LCC is provided.

Life Cycle Cost - W.F. = 6. The system is to provide at the lowest possible overall cost.

Lifetime - W.F. = 7. The facility to be powered will be a remote site and the power system is to be built into the structure.

The second of the second

Volume/Size - W.F. - 1. The power system is to be permanent. However, the system must be truck transported to the site.

Weight - W.F. = 1. The power system is to be permanently fixed. However, it must be truck transported to the site.

Fuel - W.F. = 10. The necessary fuel for the system must be trucked to the site. This is the largest logistics burden for the system.

Environmental Constraints - W.F. = 3. Some consideration is to be given to pollution; however, the site is a necessary communications link.

Location Constraints - W.F. = 1. The power system is to be used at only one site. If the system was to be used at numerous sites, this parameter would have a higher weighting factor.

Operational Constraints - W.F. = 6. The power system is to be able to operate unattended for long periods of time. Adequate solar insulation and a 10 mph average wind speed is available at the site.

System Efficiency - W.F. = 3. The system efficiency impacts the amount of fuel used (for fossil fueled systems) or the physical size of the systems (for solar or nuclear systems). If physical size of a power system is unimportant, the W.F. for this parameter for them should be zero.

Type System - W.F. = 0. The system is to be fixed. Any of the three systems (mobile, transportable, or fixed) could be used.

Start/Stop Time - W.F. = 0. The system is to be in continuous operation, with emergency backup for unexpected outages.

Growth Potential - W.F. = 4. Some growth of the site is expected and, if possible, the existing power system will be expanded to meet that growth.

Reliability - W.F. = 9. The power system must operate with minimum down time.

Maintenance and Operation - W.F. = 8. This parameter covers the second largest logistics burden for a power system.

Other Energy Production - W.F. = 5. A system capable of providing both electrical and thermal energy in the proper proportions would be the most energy efficient.

Materials Availability - W.F. = 0. Only one of this system is necessary. If more were to be built, this parameter would assume greater importance.

Development Status - W.F. = 4. This system is scheduled to be purchased in FY85.

Step #2. Use the appropriate Summary Data Display charts to determine the top five systems for each parameter. List them in priority order for one to five.

PARAMETER	LISTING OF SYSTEMS
Acquisition Cost	1. Fuel Cell 2. Diesel Engine 3. Spark Ignition Engine 4. Gas Turbine Engine (SC,CF)
Life Cycle Cost	 Diesel Engine Fuel Cell Wind Turbine (20-1) Gas Turbine Engine (SC,CF) Spark Ignition Engine
Lifetime Author Const. The Don't to	2. Gas Turbine Engine (SC,CF) 3. Solar Turbine 4. Fuel Cell
Volume/Size	
Weight mines of an as at at matayan as as up to spagnand because of asia and to bivery an induced the because of the manager	 Diesel Engine Spark Ignition Engine Fuel Cell
Fuel (Use/Year)	 Wind Turbine Photovoltaics Solar Turbine Fuel Cell Diesel Engine
Environmental Constraints	 Fuel Cell Photovoltaics Wind Turbine Radioisotope Solar Turbine
Operational Constraints	

Location Constraints

System Efficiency 1. Fuel Cell 2. Diesel Engine 3. Wind Turbine 4. Control of Cell 4. Control of Cell 5. Cell 6. Cell

Type System

Start/Stop Time

Growth Potential

Reliability

Maintenance and Operation

Other Energy Production

Building Materials

LISTING OF SYSTEMS

- Fuel Cell
- Diesel Engine
- 3. Gas Turbine Engine (SC,CF)
- Spark Ignition Engine
- Radioisotope

- 4. Gas Turbine Engine (SC,CF)
- 5. Spark Ignition Engine.
- 1.
- 2.
- 3. All systems could be used
- 5.
- Diesel Engine
 Gas Turbine Engine (SC,CF)
 Spark Ignition Engine
 Wind Turbine
 Photovoltaics

 - 1. Fuel Cell
- 2. Photovoltaics
 - 3. Wind Turbine
- 4. Diesel Engine
 - 5. Radioisotope
 - 1. Fuel Cell

 - 2. Diesel Engine
 3. Spark Ignition Engine
 4. Gas Turbine Engine (SC,CF)
 5. Radioisotope

 - 1. Fuel Cell
 2. Diesel Engine
- 3. Gas Turbine Engine (SC,CF)
 4. Spark Ignition Engine
 5. Gas Turbine Engine (SC,NF)

 - Gas Turbine Engine (SC,CF)
 Spark Ignition Engine
 Solar Turbine
 Vapor Turbine (NF)

 - 5. Diesel Generation
 - 1. Diesel Engine
 - 2. Spark Ignition Engine
 - 3. Gas Turbine Engine (SC,CF)
 - 4. Wind Turbine
 - 5. Thermionics

Development ____

LISTING OF SYSTEMS

- 1. Gas Turbine Engine (SC,CF)
- 2. Diesel Engine
- Spark Ignition Engine 3.
- 4.
- Fuel Cell Wind Turbine

Step #3. Determine the top three systems that consistently show up in the high priority parameter(s). For this example, the systems are Fuel Cells, Photovoltaics, and Wind Turbines.

Step #4. Using the appropriate Handbook data charts, fill in the quantitative or qualitative data for each system.

PARAMETER	FUEL CELL	PHOTOVOLTAICS	WIND TURBINE (10 MPH Avg Wind)
Acq. Cost	60,000	2,730,000	781,000
LCC/Yr.	64,000	409,000	92,700
Lifetime	20	10	20
Volume/Size	300 ft ³	125,000 ft ²	49,300 ft ²
Weight	18,800 1b _m	755,000 1b _m	N/A
Fuel Use/Yr		0	
Environ. Constr.	Therm. Disch.	None	None
Location Constr.	Fuel Deliveries	Solar Insolation	Wind Required
Operational Constr.	None	None	None (
System Eff.	36.7%	10-15%	20-28%
Type System	Transportable	Fixed	Fixed
Start/Stop Time	3 hrs/45 mins.	1 sec/1 sec	1 sec/1 sec
Growth Potential	Excellent	Excellent	Excellent
Reliability	No moving parts	no moving parts system exposed to environment	s moving parts system exposed to environment
Maint. & Operation	\$3373/yr	\$136,000/yr	\$53,660/yr
Other Energy Prods.	778x10 ³ BTU/hr	None	None
Bldg Matls. Avail.	Platinum	Lead	Lead
Development -	1980	1985	1985

Step #5. Using the information contained in the chart and the weighting factors established in Step #1, determine the appropriate numbers.

Acq Cost	Fuel Cell - 1 5 Photovoltaics - 3 x N.F. = 15 Wind Turbine - 2 10
LCC/YR	Fuel Cell - 1 Photovoltaics - 3 x N.F. = 15 Wind Turbine - 2
Lifetime	Fuel Cell - 1 7 Photovoltaics - 2 x W.F. = 14 Wind Turbine - 1 7
Volume/Size	Fuel Cell - 1 Photovoltaics - 3 x W.F. = 3 Wind Turbine - 2
Weight	Fuel Cell - 1 Photovoltaics - 2 x W.F. = 2 Wind Turbine - 2
Fuel Use/YR	Fuel Cell - 2 Photovoltaics - 0 x W.F. = 0 Wind Turbine - 0
Envir. Constraints	Fuel Cell - 1 3 Photovoltaics - 0 x W.F. = 0 Wind Turbine - 0 0
Loc. Constraints	Fuel Cell - 1 Photovoltaics - 3 x W.F. = 3 Wind Turbine - 3
Oper. Constraints	Fuel Cell - 0 Photovoltaics - 0 x W.F. = 0 Wind Turbine - 0
Sys. Efficiency	Fuel Cell - 1 3 Photovoltaics - 3 x W.F. = 9 Wind Turbine - 2 6
Type System	Fuel Cell - 1 0 Photovoltaics - 1 x W.F. = 0 Wind Turbine - 1 0
Start-up/Shutdown	Fuel Cell - 2 Photovoltaics - 1 x W.F. = 0 Wind Turbine - 1
Growth Potential	Fuel Cell - 1 4 Photovoltaics - 1 x W.F. = 4 Wind Turbine - 1 4

Constant States

Reliability	Fuel Cell Photovoltaics Wind Turbine	- 2 - 1 - 3	x W.F. = 18 9 27
Maint. & Oper.	Fuel Cell Photovoltaics Wind Turbine	- 1 - 3 - 2	x W.F. = 8 16
Other Energy Prod.	Fuel Cell Photovoltaics Wind Turbine	- 0 - 2 - 2	x W.F. = 10 10
Bldg Matl. Avail.	Fuel Cell Photovoltaics Wind Turbine	- 2 - 1 - 1	x W.F. = 0 0
Development	Fuel Cell Photovoltaics Wind Turbine	- 1 - 1 - 1	x W.F. = 4 4

Step #6. Adding together the results of Step #5, one arrives at the following totals:

Fuel Cell - 80 Photovoltaics - 112 Wind Turbine - 101

For this particular example, the fuel cell has been determined to be the optimal system. However, this is only a preliminary determination. Each engineer should go into much greater before choosing a particular sytems.

Town and the water of

SECTION III

FIFTY MEGAWATT, CONTINUOUS

REQUIREMENT

Power Level: 50 Mw

Operating Mode: Continuous

Frequency/Phase: 60 Hz/3Ø

Voltage Level: 13.8 Kv

Street Street

REQUIREMENT: SO MW CONTINUOUS

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WIND TURB GEN 10-51	10-5	
WIND TURE GEN 20-11	20-1	
WIND TURB GEN 20-51	20-5	
FLYWHEEL STORAGE!	RAGE	
BATTERY STORAGE!	RAGE	

GAS TURB GEN - SCICE) I MENTINGENERAL MENTIN	DIESEL GENERATOR (CF):	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACID (CF) : # PROPERTY CONTROL OF THE CELL - PHOS ACID (CF) : # PROPERTY CONTROL OF THE CENTRAL OF THE CENTROL OF THE CENTRO	4		STIRLING ENG GEN (CF)!	MHD GENERATOR (CF) 1000000000000000000000000000000000000	i		48		GAS TURB GEN (NF): SEGERGERA	PADIOISOTOPE GEN (NF) I AND THE PROPERTY OF TH	STEAM TURB GEN (SOLAR)	C VAP TURB GEN (SOLAR) I SESSESSESSESSESSESSESSESSESSESSESSESSES	GAS TURB GEN (SOLAR) !	PHOTOVOLTAIC (SOLAR)	MIND TURB GEN 10-11	MIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	FLYWHEEL STORAGE	25 EV 80 C 5 0 0	DIESEL GENERATOR (CF) SPARK IGN ENG GEN (CF) FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) MHD GENERATOR (CF) MHD GENERATOR (CF) MHD GENERATOR (CF) A) 77 STEAM TURB GEN (CF) THERMIONIC GEN (NF) GAS TURB GEN (NF) STEAM TURB GEN (NF) GAS TURB GEN (SOLAR) GAS TURB GEN (SOLAR) WIND TURB GEN (SOLAR) WIND TURB GEN 10-11 WIND TURB GEN 10-51 WIND TURB GEN 10-51 WIND TURB GEN 20-51 WIND TURB GEN 20-51 WIND TURB GEN 20-51	A) 77 8) 85 C) 90 A) 77 8) 85 C) 90 B) 90 A) 77 A) 77 A) 77 A) 77
--	------------------------	------------------------	--	---	--	------------------------	--	---	--	-----------	--	------------------------------	--	------------------------	--	------------------------	----------------------	---------------------	---------------------	---------------------	---------------------	------------------	------------------	--	---

2.25

1.75

50 MW Cont.

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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	J. Kr. e	LE STORY OF THE ST	. 50	STOR	of Or					, e	, ₂ 5
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SYSTEM	E.C.	4n	, ⁶ 0	*	\$0,	+ 60	+ 40	40	* 5°	ී ඊ	4
GAS TURB GEN - SC (CF)	1-	T-	0	0					Γ	T	
GAS TURB GEN - RC (CF)	1	-	0	0						Ī	Ī
DIESEL GENERATOR (CF)	+		1	1	1	1	1	1	广	1	Ť
SPARK IGN ENG GEN(CF)	+				1			-		T	1
FUEL CELL - PHOS ACID (CF)	1-	-	1-	1		1_	0				T
STEAM TURB GEN - COAL (CF)	1		0	0		•			•	1	F
STEAM TURB GEN - CIL(CF)	+	•	0	0				-	1.	10	+
STIRLING ENG GEN(CF)	十	•	1	1	•	•	0	0	•	10	=
MHD GENERATOR (CF)	1_	-	0	0	-					+	\vdash
MHD/STEAM GEN(CF)		1	0	0			1	-	1	+	
THERMIONIC GEN(CF)	十	-			1.	0			† •	-	+
STEAM TURB GEN(NF)	+	+	10	10	•	10	0		-	+	+
ORGANIC VAP TURB GEN(NF)	+	-	+	+	-	-	10	-	-	10	10
GAS TURB GEN(NF)	+	-	-	-	-	-	-	-	+	-	+
RADIOISOTOPE GEN(NF)	+	•	-	+	-	-	0	-	-	0	0
STEAM TURB GEN (SOLAR)	+	-	-	-	-	-	-		-	-	-
ORGANIC VAP TURB (SOLAR)	+	•	-	-	-	-	0	-	=	0	-
GAS TURB GEN (SOLAR)	+	-	-	-	-	-	-	-	-	-	-
PHOTOVOLTAIC (SOLAR)	+	1-	-	=	-	-	0	-	-	-	-
WIND TURB GEN (ALL)	+	-	-	+	-	-	-	-	-	-	-
FLYWHEEL STORAGE	+			-	1	-	-	-	-	-	+
BATTERY STORAGE	1			T							T

- - none

0 - minor

6 - moderat∈

• - major

50 MW Cont.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation0 - minor limitation• major limitation

• - overriding limitation

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ted differences

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SYSTEM	40 X	40	No.	E. Co.	300	A 50	eg e	\$
GAS TURB GEN - SC (CF)	-	-	0	•	-	_	1	1
GAS TURB GEN - RC (CF)	-	_	0	•	_	-	_	-
DIESEL GENERATOR (CF)								
SPARK IGN ENG GEN(CF)								
FUEL CELL - PHOS ACID(CF)	_	_	-		_		_	
STEAM TURB GEN - COAL(CF)	•		•		_		_	_
STEAM TURB GEN - OIL (CF)			•		_		_	_
STIRLING ENG GEN(CF)								
MHD GENERATOR (CF)	0	0	0	•				-
MHD/STEAM GEN(CF)	•		•	•	_	_	_	-
THERMIONIC GEN(CF)	0	0	0	•	_			_
STEAM TURB GEN(NF)				0		_		_
ORGANIC VAP TURB GEN(NF)			10.00					
GAS TURB GEN(NF)		_		0	_	-		-
RADIOISOTOPE GEN(NF)								
STEAM TURB GEN (SOLAR)				1_		-		-
ORGANIC VAP TURB (SOLAR)								
GAS TURB GEN (SOLAR)	_	_	0	-		_	-	-
PHOTOVOLTAIC (SOLAR)	-	-	-	-		-	_	-
WIND TURB GEN 10-1								
WIND TURB GEN 10-5		-		-				
WIND TURB GEN 20-1								
WIND TURB GEN 20-5				-	100		78.5	
FLYWHEEL STORAGE								
BATTERY STORAGE	1	100	1					

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REQUIREMENT

50 MW Cont.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major

pendence of the party of the property of the p

Etciency to dicapatility at intractation of part to a distribute of a tractation of the contract of the contra the people of the contract of Dependence of on a paracity a initiation effect on system performance SYSTEM

GAS TURB GEN - SC (CF)		0	-	-	0	0	0
GAS TURB GEN - RC (CF)	•	0	_	-	0	•	0
DIESEL GENERATOR (CF)							
SPARK IGN ENG GEN(CF)						11.0	
FUEL CELL - PHOS ACID(CF)	_	-	_	-	_	_	_
STEAM TURB GEN - COAL(CF)	•	0	_	-			0
STEAM TURB GEN - OIL (CF)		0	-	-			
STIRLING ENG GEN(CF)							
MHD GENERATOR (CF)	0	0	-	-	•	-	-
MHD/STEAM GEN(CF)	•	0	-	-	•		
THERMIONIC GEN(CF)	0	0	-	_		0	0
STEAM TURB GEN(NF)	•	0	-	-		0	0
ORGANIC VAP TURB GEN(NF)							
GAS TURB GEN(NF)	0	0	-	_		0	0
RADIOISOTOPE GEN(NF)			-		T Re		
STEAM TURB GEN (SOLAR)	•	0	•	-		0	0
ORGANIC VAP TURB (SOLAR)			1				
GAS TURB GEN (SOLAR)	-	-		-		-	-
PHOTOVOLTAIC (SOLAR)	-	-	•	-	-	-	-
WIND TURB GEN 10-1							
WIND TURB GEN 10-5							
WIND TURB GEN 20-1							Γ
WIND TURB GEN 20-5							
FLYWHEEL STORAGE				T	1		T
BATTERY STORAGE			1				

REGUIREMENT: SO MM CONTINUOUS

1.5 2.0 2.5 3.0 3.5 4.0	77 8)85 C	06(2) (8) (8) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4		70000000000000000000000000000000000000		V02440000000000000000000000000000000000		8	40-100000000000000000000000000000000000	40000000000000000000000000000000000000	V0400000000000000000000000000000000000	7	Y	0614	A100								
.5 1.0 1.5					Y0000000000000000000000000000000000000	V01010101010101010101010101010101010101				***************************************	04-1-0		***************************************		V#20040000000000000000000000000000000000		V4444444444444444444444444444444444444	08 (Y 200000000000000000000000000000000000	8				
0.		DIFSEL GENERATOR (CF)	SPARK IGN ENG GEN (CF)!	FUEL CELL - PHOS ACTO (CF) 14	STEAM TURB GEN - COAL (CF) 14	STEAM TURB GEN - OIL (CF) 19	STIRLING ENG GEN (CF)	MMD GENERATOR (CF) 18	MHD/STEAM GEN (CF) 14	THERMIONIC GEN (CF)	STEAM TURB GEN (NF) 19	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 29-5!	FLYWHEEL STORAGE!

and the second

50 MW Cont

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system
T - transportable system
F - fixed system

System	Туре
GAS TURB GEN - SC (CF)	F
GAS TURB GEN - RC (CF)	F
DIESEL GENERATOR (CF)	
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	F
STEAM TURB GEN - COAL (CF)	F
STEAM TURB GEN - OIL(CF)	F
STIRLING ENG GEN(CF)	
MHD GENERATOR (CF)	F
MHD/STEAM GEN(CF)	· F
THERMIONIC GEN(CF)	F
STEAM TURB GEN(NF)	F
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	F
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	F
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	P
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	0.33 1.15
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	
BATTERY STORAGE	

NUTES X 10 3.5 4.0 4.5	district all district and all district a	A) 77 (A) 17 (A)	8 8 8 7 E 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	TO THE LOSS OF THE LAND TO SELECT THE LOSS OF THE LOSS
.0 .5 1.0 1.5 2.0 2.5	6 A)77 B)85 C)90 A)77 B)85 C)90	B) 90 A) 90	A) 90	
	GAS TURB GEN - SC(CF): GAS TURB GEN - RC(CF): DIESEL GENERATOR (CF): SPARK IGN ENG GEN (CF): FUEL CELL - PHOS ACID (CF):	STEAM TURB GEN - COAL (CF) IS STEALING ENG GEN (CF) IS MHD GENERATOR (CF) IS MHD/STEAM GEN (CF) IS THERMIONIC GEN (CF) IS	ORGANIC VAP TURB GEN (NF)! GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)!	ORGANIC VAP TURB GEN (SOLAR) I GAS TURB GEN (SOLAR) I PHOTOVOLTAIC (SOLAR) IC VIND TURB GEN 10-11 WIND TURB GEN 20-11 WIND TURB GEN 20-11 FLYWHEEL STORAGE I

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REQUIREMENT

PARAMETER

50 MW Cont.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	Not modular
DIESEL GENERATOR (CF)	
SPARK IGN .ENG GEN (CF)	
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	Not modular
STEAM TURB GEN - OIL(CF)	Not modular
STIRLING ENG GEN (CF)	
MHD GENERATOR (CF)	Not modular
MHD/STEAM GEN(CF)	Not modular
THERMIONIC GEN(CF)	Partly modular
STEAM TURB GEN (NF)	Not modular
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	Not modular
ORGANIC VAP TURB (SOLAR)	1
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	新型 明 基 基 等 是 基 节 等 改 集 等 。
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	
FLYWIIEEL STORAGE	
BATTERY STORAGE	

The tabulated conditions exist in the power system to the extent indicated.

tigg fig. of the following of the fedited of the fe

SYSTEM	₩10th	ato dito	Stro	47.0	S. Cot	45.6	THO	, go	of it
GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	_	_
GAS TURB GEN - RC (CF)	0	•	0	-	•		•	-	_
DIESEL GENERATOR (CF)									
SPARK IGN ENG GEN(CF)									
FUEL CELL - PHOS ACID (CF)	-	-	_		0	-			
STEAM TURB GEN - COAL (CF)	•	0	0		0		•	_	-
STEAM TURB GEN - OIL (CF)	•	0	0	-	0		•	-	_
STIRLING ENG GEN(CF)									
MHD GENERATOR (CF)	0	•	-	_	•		•	-	-
MHD/STEAM GEN(CF)	•	•	0		•		•	_	_
THERMIONIC GEN(CF)	0	•	-	-	•	0	0	-	_
STEAM TURB GEN(NF)	•	0	0	0	0		•	_	_
ORGANIC VAP TURB GEN(NF)									
GAS TURB GEN(NF)	•	0	0	0	_		•	-	_
RADIOISOTOPE GEN(NF)									
STEAM TURB GEN (SOLAR)	•	0	0	-	0		•	•	-
ORGANIC VAP TURB (SOLAR)							9		
GAS TURB GEN (SOLAR)	0	0	0	-	0	0			_
PHOTOVOLTAIC (SOLAR)	-	0	-	-	0	-	-		-
WIND TURB GEN 10-1		8							
WIND TURB GEN 10-5	2								
WIND TURB GEN 20-1									
WIND TURB GEN 20-5		100					1		
FLYWHEEL STORAGE									
BATTERY STORAGE									

- Condition does not exist in system
- C Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

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	50 MM C	
	REQUIREMENT: 50 MM C	
TORAGE		
BATTERY S		

FLYWHEEL STORAGE!

WIND TURB GEN 10-11

WIND TURB GEN 20-11 WIND TURB GEN 20-51

WIND TURB GEN 10-51

GAS TURB GEN (SOLAR) I GENERAL GENERAL

7 YEAR X 10 .7 .8												V0000000000000000000000000000000000000		
1977 DOLLARS/YEAR	e end ediko T 175 e est						8		AP000000000000000000000000000000000000					A11010101010101010101010101010101010101
ental	GAS TURB GEN - SCICF) 10000G GAS TURB GEN - RCICF) 10000G	DIESEL GENERATOR (CF)! SPARK IGN ENG GEN (CF)!	FUEL CELL - PHOS ACID (CF) #####E	STEAM TURB GEN - COAL (CF) 100000000	STEAM TURB GEN - OIL (CF) 18888888	STIRLING ENG GEN (CF)!	MHD GENERATOR (CF) : 440000000000000000000000000000000000	MHD/STEAM GEN (CF): BEGREGGGGGGGGGAA	***************************************	STEAM TURB GEN (NF) : BEBEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NP) : BEBEGGGGGGGGGGG	RADIOISOTOPE GEN (NF)!	STEAM TURB GEN (SOLAR) I BOSTOS BOSTOS BOLD

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REQUIREMENT: 50 MW CONTINUOUS

dir.	0	.0 .5 1.0 1.5	1.0	1.5	a :	2.5	3.0 x 10	3.5	:
GAS TURB GEN - RC (CF) GENERAL CONTINUE CONTINUE CONTINUE CENTRAL A) 77 B) 85 C) 90		- RC(CT) General Control Con	7.14	A CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	A) 77 B) B5 C) 90				
DIESEL GENERATOR (CF)									
FUEL CELL - PHOS ACID	ICF) !	ACID (CF) Identifications and against an arrangements	- COLORD	9					
STEAM TURB GEN - COAL	(CF) 1 8000		8) 80 C) 82	85	(CF) : 0.000 (CF)	1			
STEAM TURB GEN - OIL	(CF) 0000	***************************************			(CF) : 00000000000000000000000000000000000	1			
STIRLING ENG GEN (CF)	1(4)				T10				
MHD GENERATOR (CF): 10010010101010101010101010101010101010	(CF) 1 8000	***************************************	********		***************************************	•			
MHD/STEAM GEN (CF) 1990449040100400400410101010101010101010	(CF) 9800	***************************************			V			8) 90	
THERMIONIC GEN	(CF)	VOCCE OF CO.		06 (V	***				
STEAM TURB GEN	INF) I BOOM	***********	********		VEDEROR OF THE PROPERTY OF THE	*			
ORGANIC VAP TURB GEN (NF)	INF) I								
GAS TURB GEN	INF) 0000	***************************************			GEN (NF) : e400000000000000000000000000000000000				
RADIOISOTOPE GEN (NF)	NF) I				06(4				
STEAM TURB GEN (SOLAR) I BEFORE CONTROLLES CONTROLLES CONTROLLES	AR) 1 6888	***************************************			1				
ORGANIC VAP TURB GEN (SOLAR)	ARI			A) 90					
GAS TURB GEN (SOLAR) ! OPTITION OF THE GAS TURB GEN (SOLAR) !	AR) 10000	***************************************	***************************************	************	V				
PHOTOVOLTAIC (SOLAR)	AR) I				A) 80				
WIND TURB GEN 10-1	-1-								
WIND TURB GEN 10-5	19-0								
WIND TURB GEN 20-1	-11-0								
WIND TURB GEN 20-5	10-51								
FLYWHEEL STORAGE	AGE								
BATTERY STORAGE	AGE								

REQUIREMENT

PARAMETER

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17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	None
DIESEL GENERATOR (CF)	
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID (CF)	Platinum
STEAM TURB GEN - COAL (CF)	None
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	None
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	None
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	9'.
ORGANIC VAP TURB (SOLAR)	None
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	reserver for convenerating parteries
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	
BATTERY STORAGE	

SECTION IV

FIFTY MEGAWATT, 1 HOUR

REQUIREMENT

Power Level:

50 Mw

Operating Mode:

1 hour per day

Frequency/Phase:

60 Hz/3Ø

Voltage Level:

13.8 Kv

	PARAMETER
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GAS TURB GEN - SC (CF) 1866										
GAS TURB GEN - RC(CF) I GEGGGGG	2									
DIESEL GENERATOR (CF)	A) 77 B) B5 C) 90									
SPARK IGN ENG GEN (CF)										
FUEL CELL - PHOS ACID (CF) 1909	8300000000									
STEAM TURB GEN - COAL (CF): 1000-000000000000000000000000000000000	000000000000000000000000000000000000000	**********	A							
STEAM TURB GEN - OIL (CF) 1000	V0000000000000000000000000000000000000	· · · · · · · · · · · · · · · · · · ·	4							
STIRLING ENG GEN (CF)		: 2								
MHD GENERATOR (CF) 1994		**********	***************************************		¥41000000000000000000000000000000000000			-	***************************************	1
MHD/STEAM GEN (CF)	A) .10100000E+09	60.							S	
THERMIONIC GEN (CF) I CONTRACTOR	***************************************	***************************************	***************************************	***************************************	***************************************				***************************************	*
STEAM TURB GEN (NF) 1000	A) .13070000E-09	60.	***************************************	***************************************					A) 90	
ORGANIC VAP TURB GEN (NF)								11(4	(T)	
GAS TURB GEN (NF) : 000	¥1000000000000000000000000000000000000	***************************************			A ****					
RADIOISOTOPE GEN (NF)				06 (¥						
STEAM TURB GEN (SOLAR) !	***************************************	***************************************	***************************************		¥11011011101110111010101010101010101010	4				
ORGANIC VAP TURB GEN (SOLAR)					A) 90					
GAS TURB GEN (SOLAR) I 444404444444441024104666441110468666A	***************************************	************		Y						
PHOTOVOLTAIC (SOLAR) 1848	*************		99 C							
WIND TURB GEN 10-11		56 (3								
WIND TURB GEN 10-51										
WIND TURB GEN 20-11										
WIND TURB GEN 20-51										
FLYWHEEL STORAGE! DOG										
BATTERY STORAGE: 80	A)80 8)85 C)90									

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1 A) 77 B) 85	
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I A) 77 B) 85	
1 A) 77 B) 85	
I A) 77 B) 85	
1 A) 77 B) B5	

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GAS TURB GEN - SCICET 1 ATT	A) 77 B)	06 C) 30								
DIESEL GENERATOR (CF)	A) 77 B) 85 C) 90	06 (3								
SPARK IGN ENG GEN (CF)										
FUEL CELL - PHOS ACID (CF)	8000000000									
STEAM TURB GEN - COAL (CF) 10000000000	000000000000000000000000000000000000000		v							
STEAM TURB GEN - OIL (CF) 1000000000000000000000000000000000000	•••••••									
STIRLING ENG GEN (CF)										
MHD GENERATOR (CF)				V		***************************************				
MHD/STEAM GEN (CF)	/				A) 85					
THERMIONIC GEN (CF) CONTROL OF	***************************************	*****				***************************************		1		
STEAM TURB GEN (NF) : PRESENCE CONTRACTOR CO	***************************************		•			*****	A) 90			
ORGANIC VAP TURB GEN (NF)					F 1					
GAS TURB GEN (NF) I DECORDED CONTRACTOR			V							
RADIOISOTOPE GEN (NF)	Sellen Selection	06 (V	/							
STEAM TURB GEN (SOLAR)			.2			VIII.	1			
ORGANIC VAP TURB GEN (SOLAR)						A) 90				
GAS TURB GEN (SOLAR) I GEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	*********		•		1					
PHOTOVOLTAIC (SOLAR) I GOODECECOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCO	***************************************	-	20000	A) 80						
WIND TURB GEN 10-1		56 (3								
WIND TURB GEN 10-5										
WIND TURB GEN 20-1										
WIND TURB GEN 20-51										
FLYWHEEL STORAGE		DEA								
BATTERY STORAGE	A180 8185 C190	20.90								

VIII.

REQUIREMENT: 50 MW 1 MR

	.0 .5 1.0	1977 DOLLARS 5 2.0 2.5	3.0 x	3.5	0.4	4.5
GAS TURB GEN - SCICE)	A) 77 B) 85 C) 90					
GAS TURB GEN - RC (CF)	1 A) 77 B) 85 C) 90					
DIESEL GENERALUM (CF)						
STATE ION ENG GEN (CF)						
STEAM THOS ACTURED CONT.	8) 80 C) 85					
STEAM TURB GEN - OIL (CF)	77 (A C C C C C C C C C C C C C C C C C C	4				
STIRLING ENG GEN (CF)						
MHD GENERATOR (CF)		***************************************			Y	
MMD/STEAM GEN (CF)	· · · · · · · · · · · · · · · · · · ·			¥	A) 85	
THERMIONIC GEN (CF)						
STEAM TURB GEN (NF)			V			
ORGANIC VAP TURB GEN (NF)						
GAS TURB GEN (NF)		111111				
RADIOISOTOPE GEN (NF)	0617日,可以我们对我们在公司是完全的情况,中以为一种学生的情况。					
STEAM TURB GEN, (SOLAR)				•		•
ORGANIC VAP TURB GEN (SOLAR)	如果的 · 中国,我们是有关的,我们们的不断的现在分词,也是有什么的。					A) 90
GAS TURB GEN (SOLAR)		***************************************	V			
PHOTOVOLTAIC (SOLAR)			A)80			
WIND TURB GEN 10-11	- 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	56 (3				
WIND TURB GEN 10-51	1000年以及中央の場合の					
WIND TURB GEN 20-11						
WIND TURB GEN 20-5	The same of the sa					
FLYWHEEL STORAGE	I TOTAL TOTA					
BATTERY STORAGE		3) 85				

REQUIREMENT: 50 MW 1 HR

3.0 3.5 4.0 4.5	4) 77 8) 85 C) 90					***************************************	41111111111111111111111111111111111111	N. C.			i	V0000000000000000000000000000000000000	43.77		•	4	0								
ARS		GAS TURB GEN - RC(CF) : 00000000000000000000000000000000000			FUEL CELL - PHÓS ACID (CF) 1000000000000000000000000000000000000	STEAM TURB GEN - COAL (CF) LEGGEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	STEAM TURB GEN - OIL (CF) FORDITION CONTINUED		F) 100011420100111111111111111111111111111		THERMIONIC GEN (CF) : GOODGOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGGOO	A)90 STEAM TURB GEN (NF)!OFCTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG		ACCEPTANCE OF THE PROPERTY OF	A) 90	STEAM TURB GEN (SOLAR)!####################################	A) 90	GAS TURB GEN (SOLAR) I FFETTE FOR THE FORTER FOR THE FORTER FOR THE FORTER FOR	PHOTOVOLTAIC (SOLAR) I 195000,10000,100000000000000000000000000	\$6C)				FLYWHEEL STORAGE; GOOGOOGOOGOOGOOGOOGOOGOOGOOGOOGOOGOOGOO	A) 80 8) 85 C) 9 Battery Storage (####################################
	GAS TURB GEN - SCICF) !!	GAS TURB GEN - RC(CF)	DIESEL GENERATOR (CF)!	SPARK IGN ENG GEN (CF) !	FUEL CELL - PHOS ACID (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF) !!	STIRLING ENG GEN (CF)	MHD GENERATOR (CF) !!	MHD/STEAM GEN (CF) !	THERMIONIC GEN (CF) !!	STEAM TURB GEN (NF) !!	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF.)	PADIOISOTOPE GEN (NF)!	STEAM TURB GEN (SOLAR) !!	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	FLYWHEEL STORAGE!	BATTERY STORAGE!

William William

CA5 1078 GEN 3 171 B) 85 C)	
	A) 77 B) 85 C) 90
GAS TURB GEN - RC(CF) LAGREDGEGGGG	GAS TURB GEN - RC(CF); ##8884466466666666666666666666666666666
DIESEL GENERATOR (CF);	*
SPARK IGN ENG GEN (CF) !	
FUEL CELL - PHOS ACID (CF)	
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)!	
STIRLING ENG GEN (CF)!	
MHD GENERATOR (CF)!	
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)!	
STEAM TURB GEN (NF.)	
ORGANIC VAP TURB GEN (NF)!	
GAS TURB GEN (NF) 188868A	
RADIOISOTOPE GEN (NF)!	
STEAM TURB GEN (SOLAR)!	
ORGANIC VAP TURB GEN (SOLAR)!	
GAS TURB GEN (SOLAR)!	
PHOTOVOLTAIC (SOLAR)!	
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	
FLYWHEEL STORAGE!	
BATTERY STORAGE!	

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REQUIREMENT: 50 MW 1 HR

	.0 .5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5	5.
GAS TURB GEN - SCICF)		
GAS TURB GEN - RC(CF)		
DIESEL GENERATOR (CF)		
SPARK 16N ENG GEN (CF)		
FUEL CELL - PHOS ACID (CF) IE		
STEAM TURB GEN - COAL (CF) !A	14100 (100)	
STEAM TURB GEN - OIL (CF)	A	
STIRLING ENG GEN (CF)		
MHD GENERATOR (CF)	MHD GENERATOR (CF) 10000000000000000	
MHD/STEAM GEN (CF)	1.85	
THERMIONIC GEN (CF)		
STEAM TURB GEN (NF)		
ORGANIC VAP TURB GÉN (NF)		
GAS TURB GEN (NF)		
RADIOISOTOPE GEN (NF)		
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR)	A) .76000000E+06	060
GAS TURB GEN (SOLAR) I DECENDED CONTROL	***************************************	
PHOTOVOLTAIC (SOLAR)	PHOTOVOLTAIC (SOLAR): 000000000000000000000000000000000000	
WIND TURB GEN 10-1		
WIND TURB GEN 10-5		
WIND TURB GEN 20-1		
WIND TURB GEN 20-5		
FLYWHEEL STORAGEIG		
BATTERY STORAGEID	A180 B185 C190	
	1 4) 77 8) 85	

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WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE

GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR)

FUEL CELL - PHOS ACID (CF) interespenses to the properties of the control of the

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1.75

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DIESEL GENERATOR (CF)

SPARK IGN ENG BEN (CF)

STEAM TURB GEN - COAL (CF)

STEAM TURB GEN - OIL (CF) STIRLING ENG GEN (CF) MHD GENERATOR (CF) MHD/STEAM GEN (CF) THERMIONIC GEN (CF) STEAM TURB GEN (NF)

54

ORGANIC VAP TURB GEN (NF)

GAS TURB GEN (NF) RADIOISOTOPE GEN (NF) STEAM TURB GEN (SOLAR) ORGANIC VAP TURB GEN (SOLAR)

REQUIREMENT: 50 MW 1 HR

	.0 .1 .2 .3 .4 .5 .6 .7 .8 .9
GAS TURB GEN - SCICF) 194	
GAS TURB GEN - RCICF) 101	***************************************
DIESEL GENERATOR (CF)	A) 77 B) 85 C) 90
SPARK IGN ENG GEN (CF)	
FUEL CELL - PHOS ACTO (CF) 194	***************************************
STEAM TURB GEN - COAL (CF) 180	
STEAM TURB GEN - OIL (CF) 100	
STIRLING ENG GEN (CF)	
MHD GENERATOR (CF) 100	
MMD/STEAM GEN (CF)	
THERMIONIC GEN (CF) 188	
STEAM TURB GEN (NF)	A) 90
ORGANIC VAP TURB GEN (NF)!	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF) !	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)!	在社会中国的企业中的企业中的企业中的企业中的企业中的企业中的企业中的企业中的企业中的企业中
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	,但是在中心的时间,我们是一个人,我们们的一个人的时间,我们们的一个人的时间,我们们的一个人的时间,我们们们的一个人的时间,我们们们的一个人的时间,也可以是一个人
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	
FLYWHEEL STORAGE!	のできた。 19 1年 19 1
BATTERY STORAGE!	

GAS TURB GEN - SC	ACOUNT IN THE PROPERTY OF THE
GAS TURB GEN - RC	GAS TURB GEN - RC(CT): AC(CT):
DIESEL GENERATOR	(CF) !
SPARK IGN ENG GEN (CF)	(66)
FUEL CELL - PHOS ACTO	884068666666666666666666666666666666666
STEAM TURB GEN - COAL	(CF) : ** *** *** *** *** *** *** *** *** *
STEAM TURB GEN - OIL	A177
STIRLING ENG GEN	(CF) I
MHD GENERATOR	(CF) 00000000000000000000000000000000000
MHD/STEAM GEN	(CP.) 1
THERMIONIC GEN	
STEAM TURB GEN	A) 90 (NF) 00000000A
ORGANIC VAP TURB GEN ((NF) I
GAS TURB GEN ((NF) I DESCRIPTION
RADIOISOTOPE GEN	
STEAM TURB GEN (SOLAR)	I CONT
ROANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)	LAR!
PHOTOVOLTAIC (SOLAR)	ART CARDEN FOR CREATE CONTRACTOR OF THE CONTRACT
WIND TURB GEN 1	10-11
WIND TURB GEN 1	10-5 destruction and the state of the state
WIND TURB GEN 2	20-11
WIND TURB GEN 2	20-51
	ORAGE I STREET S
BATTERY STOR	BATTERY STORAGE: G.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C
	REQUIREMENT: 50 MW 1 HR PARAMETER: 68 FUEL COST/YEAR

A190

1977 DOLLARS/YEAR

.3

REQUIREMENT: SO MW 1 HR

REQUIREMENT

50 MW 1 Hr.

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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- - none

0 - minor

e - moderate

• - major

50 MW 1 Hr.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation

O - minor limitation

e - major limitation

• - overriding limitation

ted to the standard of the sta

ALCOHOL: The Award London		v x	e ,	2,	2 .	30	6	×°.
SYSTEM	40	2 × ×	et vo	Tr. A.	200	4 6	6, 20	\$
GAS TURB GEN - SC (CF)	_	-	0		0	-	-	_
GAS TURB GEN - RC (CF)	-	_	0		_	_	_	_
DIESEL GENERATOR (CF)								
SPARK IGN ENG GEN(CF)								
FUEL CELL - PHOS ACID(CF)	-	-	_		_		_	-
STEAM TURB GEN - COAL (CF)					1_			_
STEAM TURB GEN - OIL(CF)			•		-			_
STIRLING ENG GEN(CF)								
MHD GENERATOR (CF)	0	0	0	•			_	-
MHD/STEAM GEN(CF)	,s					g) i		
THERMIONIC GEN(CF)	0	0	0		_	_	_	-
STEAM TURB GEN(NF)				0				-
ORGANIC VAP TURB GEN(NF)				ľ				
GAS TURB GEN(NF)		_		0	54	_		
RADIOISOTOPE GEN(NF)				Ĭ				Ī
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB (SOLAR)		Ť	Ť					Ī
GAS TURB GEN (SOLAR)	1 -	-	0		•	-	1_	
PHOTOVOLTAIC (SOLAR)		-	Ĭ-	1 -	•	_		
WIND TURB GEN 10-1					Ť			
WIND TURB GEN 10-5	1.5							
WIND TURB GEN 20-1								
WIND TURB GEN 20-5								
FLYWHEEL STORAGE								-
BATTERY STORAGE	Ť	1	1	=	-	-	-	-

50 MW 1 Hr.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

Jod capability of at its consistent at its property of the constitution of the constit

SYSTEM	ext.	201	Sec	Sec	010	Ser	4,5
GAS TURB GEN - SC (CF)	•	0	-	-	0	0	0
GAS TURB GEN - RC (CF)	0	0	-	-	0	0	0
DIESEL GENERATOR (CF)							
SPARK IGN ENG GEN(CF)							
FUEL CELL - PHOS ACID(CF)	-	-	-	-	-	-	-
STEAM TURB GEN - COAL(CF)	0	0	-	-	8	0	0
STEAM TURB GEN - OIL (CF)	0	0	-8	-			
STIRLING ENG GEN(CF)			100				
MHD GENERATOR (CF)	0	•	_	_	•	-	-
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-		0	0
STEAM TURB GEN(NF)	0	0	_	-		0	0
ORGANIC VAP TURB GEN(NF)			-				
GAS TURB GEN(NF)	0	0	7	-	0	0	0
RADIOISOTOPE GEN(NF)			1				
STEAM TURB GEN (SOLAR)	0	0	•	-	0	0	0
ORGANIC VAP TURB (SOLAR)							
GAS TURB GEN (SOLAR)	-	-	•	-	0	-	-
PHOTOVOLTAIC (SOLAR)	-	-	•		-	_	-
WIND TURB GEN 10-1					0		
WIND TURB GEN 10-5							
WIND TURB GEN 20-1							Γ
WIND TURB GEN 20-5	-	-	-		-	-	1-
FLYWHEEL STORAGE	_	_	_	-	-	-	
BATTERY STORAGE	-	_		-		-	-

REQUIREMENT: 50 MW 1 HR

PHOTOVOLTAIC (SOLAR) !

WIND TURB GEN 10-51 WIND TURB GEN 10-1

WIND TURB GEN 20-1

WIND TURB GEN 20-5

RADIOISOTOPE GEN (NF) !

ORGANIC VAP TURB GEN (SOLAR)

ORGANIC VAP TURB GEN (NF)

PARAMETER: 10 SYSTEM EFFICIENCY

STIRLING ENG GEN (CF)

SPARK IGN ENG GEN (CF)

DIESEL GENERATOR (CF)

MHD/STEAM GEN (CF)

50 MW 1 HR.

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	F
GAS TURB GEN - RC (CF)	F
DIESEL GENERATOR (CF)	<u> </u>
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	F
STEAM TURB GEN - COAL (CF)	F
STEAM TURB GEN - OIL(CF)	F
STIRLING ENG GEN(CF)	
MHD GENERATOR (CF)	F
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	F
STEAM TURB GEN(NF)	F
ORGANIC VAP TURB GEN(NF)	48
GAS TURB GEN(NF)	F
RADIOISOTOPE GEN(NF)	4
STEAM TURB GEN (SOLAR)	F
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	
WIND TURB GEN 2,0-5	
FLYWHEEL STORAGE	F
BATTERY STORAGE	F

1.0 1.25 1.5 1.75 2.0 2.25		sed to		i	50() 08(8						~				VIII 10000000000000000000000000000000000	06.7									
0 .25 .5 .75 1.0	B) 85 C) 90	A) 77 B) 85 C) 90		FUEL CELL - PHOS ACID (CF): PROTESTOR PROTESTO	4-6-1-6-4-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-		A) . +8000000E+03		A/85			A) .4800000E+03	•	4130		A) .48000000E+03) o o o o o o o o o o o o o o o o o o o	S						A) 77 8) 85
	GAS TURB GEN - SC(CF) 100000 1 A) 77 GAS TURB GEN - RC(CF) 100000	DIESEL GENERATOR (CF)	SPARK IGN ENG GEN (CF)	ACTO (CF)	STEAM TURB GEN - COAL (CF) 190000	STEAM TURB GEN - OIL (CF) : 8488	STIRLING ENG GEN (CF)	MHD GENERATOR (CF) IA	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF) : ####	DRGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF) : 0000	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR) ! 84898	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR) !	PHOTOVOLTAIC (SOLAR) IC	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	FLYWHEEL STORAGEIG	BATTERY STORAGEID	

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REQUIREMENT

PARAMETER

50 MW 1 Hr.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	Not modular
DIESEL GENERATOR (CF)	
SPARK IGN ENG GEN(CF)	The first party with a second of the second of
FUEL CELL - PHOS ACID (CF)	Fully modular
STEAM TURB GEN - COAL (CF)	Not modular
STEAM TURB GEN - OIL(CF)	Not modular
STIRLING ENG GEN (CF)	
MHD GENERATOR (CF)	Not modular
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	Not modular
ORGANIC VAP TURB GEN (NF)	The second second
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	Not modular
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	The second second second second second
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	[1] [1] [2] [2] [2] [3] [4] [4] [4] [4] [4] [4] [4] [4] [4] [4
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully modular

The tabulated conditions exist in the power system to the extent indicated.

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SYSTEM	AUF.	et ou	200	C 410	St. St. Cot	TO THE	THO!	The state of the season	tro of tro	teg
GAS TURB GEN - SC (CF)	0		0	-		0		-		
GAS TURB GEN - RC (CF)	0	•	0	-	•		•			
DIESEL GENERATOR (CF)										
SPARK IGN ENG GEN(CF)										0
FUEL CELL - PHOS ACID (CF)	-	-	_	-	0	_	-	_	-	
STEAM TURB GEN - COAL (CF)	•	0	0	-	0		•	_	_	
STEAM TURB GEN - OIL (CF)	•	0	0	-	0		•	-	_	
STIRLING ENG GEN(CF)										
MHD GENERATOR (CF)	0	•		-	•		•	_		•
MHD/STEAM GEN(CF)			116							
THERMIONIC GEN(CF)	0	•	-	-		0	0	-	_	
STEAM TURB GEN(NF)	•	0	0	0	0		•	-	-	
ORGANIC VAP TURB GEN(NF)										
GAS TURB GEN(NF)	•	0	0	0	-		•	-	_	•
RADIOISOTOPE GEN(NF)										
STEAM TURB GEN (SOLAR)		0	0	-	0	•	•	•	-	
ORGANIC VAP TURB (SOLAR)		15								
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	-	•		
PHOTOVOLTAIC (SOLAR)	-	0	-	-	0	-	-		_	
WIND TURB GEN 10-1										
WIND TURB GEN 10-5										
WIND TURB GEN 20-1										
WIND TURB GEN 20-5		Dayobia California								
FLYWHEEL STORAGE	0	-	•	-	-			-		
BATTERY STORAGE	1-	0		1-	0	-	-	-	and the second	
	_	-		-	-	-	-		-	CONTRACTOR OF THE PARTY OF THE

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists
 and is a governing
 factor in determin ing system perform ance and reliability

REQUIREMENT: SO MW 1 HR

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GAS TURB GEN - SC(CF) 1006 A 177 GAS TURB GEN - RC(CF) 1000	A) 77 B) 8	8) 85 () 90								
DIESEL GENERATOR (CF)	1 A) 77 B) B	8) 85 () 90								
SPARK IGN ENG GEN (CF)										
FUEL CELL - PHOS ACID (CF) 18										
STEAM TURB GEN - COAL (CF) ! PREFERENCE CONTRACTOR	18)80	v								
STEAM TURB GEN - OIL (CF) 1980000000	V									
STIRLING ENG GEN (CF) !										
MHD GENERATOR (CF) 1880		V	1							
MHD/STEAM GEN (CF)		A) 85								
THERMIONIC GEN (CF) CONTINUED	•	•		****						
STEAM TURB GEN (NF) : 0401000000000000000000000000000000000	*******		06 (4	****						
ORGANIC VAP TURB GEN (NF)			11.0							
GAS TURB GEN (NF) 1000A	1									
RADIOISOTOPE GEN (NF) !	06(4									
STEAM TURB GEN (SOLAR): 9909990000000000000000000000000000000	***********	***************************************				***************************************				
ORGANIC VAP TURB GEN (SOLAR)!		20000								
GAS TURB GEN (SOLAR) I DESCRIPTION OF THE PROPERTY OF THE PROP						***************************************			1	
PHOTOVOLTAIC (SOLAR) 198891						V0000000000000000000000000000000000000	,	90000		***************************************
WIND TURB GEN 10-11	a a	.28900000E+07								110
WIND TURB GEN 10-51	To dispersions.									
WIND TURB GEN 20-11										
WIND TURB GEN 20-51										
FLYWHEEL STORAGEING		Section of the second								
BATTERY STORAGEID	90	B) 85 C) 90								
	1 A) 77 8) 85	•								

REGUIREMENT: SO MW 1 HR

GAS TURB GEN - SC(CF) IR	.5 1.0 1.5	
GAS TURB GEN - RC (CF) !!	GAS TURB GEN - RC(CF): 000000000000000000000000000000000000	
DIESEL GENERATOR (CF)	A) 77 B) 85 C) 90	
SPARK IGN ENG GEN (CF)!		
FUEL CELL - PHOS ACID (CF) 16	FUEL CELL - PHOS ACID (CF) INTRACTOR OF THE PROPERTY OF THE PR	
STEAM TURB GEN - COAL (CF) !!	STEAM TURB GEN - COAL (CF) INCOMENCENCENCENCENCENCENCENCENCENCENCENCENCE	
STEAM TURB GEN - OIL (CF) !!	STEAM TURB GEN - OIL (CF) 1000000000000000000000000000000000000	
STIRLING ENG GEN (CF)!		
MHD GENERATOR (CF) 14	MHD GENERATOR (CF) International Control of	
MHD/STEAM GEN (CF)!		
THERMIONIC GEN (CF) 16	THERMIONIC GEN (CF) I 100000000000000000000000000000000000	
STEAM TURB GEN (NF) 14	STEAM TURB GEN (NF): 1990-1990-1990-1990-1990-1990-1990-1990	
ORGANIC VAP TURB GEN (NF)!	All	
GAS TURB GEN (NF) 11	GAS TURB GEN (NF) ICCOCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	
RADIOISOTOPE GEN (NF)!		
STEAM TURB GEN (SOLAR) 14	STEAM TURB GEN (SOLAR) I 1990-000-000-00-00-00-00-00-00-00-00-00-0	
ORGANIC VAP TURB GEN (SOLAR)!	A100	
GAS TURB GEN (SOLAR) II	GAS TURB GEN (SOLAR) I DESCRICTOR OF THE TOTAL OF THE SERVICE OF T	
PHOTOVOLTAIC (SOLAR)!	A) 80	
WIND TURB GEN 10-11		
WIND TURB GEN 10-51		
WIND TURB GEN 20-11		
WIND TURB GEN 20-5!		
FLYWHEEL STORAGE!		
BATTERY STORAGE!		
•		

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PARAMETER

50 MW 1 Hr.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	None
DIESEL GENERATOR (CF)	
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL (CF)	None
STEAM TURB GEN - OIL (CF)	None
STIRLING ENG GEN(CF)	
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	NOTE
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	Notie
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	Possibly lead for conventional batteries
WIND TURB GEN 10-1	reserve to the conventional bacteries
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	
BATTERY STORAGE	Possibly lead for conventional batteries

SECTION V

TEN MEGAWATT, CONTINUOUS

REQUIREMENT

Power Level:

10 Mw

Operating Mode:

Continuous

Frequency/Phase:

60 Hz/3Ø

Voltage Level:

4160 V

REQUIREMENT: 10 MW CONTINUOUS

	•	7	2.	e.	1977	1977 DOLLARS	e × 9.	٠.	•	
GAS TURB GEN - SCICF) 106	(CF)									
GAS TURB GEN - BC(CF) 1886	1 (32)	A) 77 8185 C190								
100 CHO. CHO	-	A) 77 8185 C) 90								
DIESEL GENERATOR (CF) IA	(3)									
SPARK IGN ENG GEN (CF)	(6)									
FUEL CELL - PHOS ACID (CF) 10E	(CF)									
STEAM TURB GEN - COAL (CF) 10000	(CF)	8) 80 C) 85								
STEAM TURB GEN - OIL (CF) 16	(65)	V								
STIRLING ENG GEN (CF) 10A	(CF)	A) 77								
MHD GENERATOR (CF) 10000	(CE)	A1000000000000000000000000000000000000	•		V					
MHD/STEAM GEN (CF)	(CF)			A) 85	•					
THERMIONIC GEN (CF) INTERPOLATION OF THE PROPERTY OF THE PROPE	(3)		*******	•			4			
STEAM TURB GEN (NF)!	(NF)					A) 90				
ORGANIC VAP TURB GEN (NF)!	(NF)									
GAS TURB GEN (NF) : CODE	(NF)	i	¥****							•
RADIOISOTOPE GEN (NF) !	(NE)	A) 90								
STEAM TURB GEN (SOLAR) I DOCTOR CONTROLL CONTROL CONTR	LAR		***************************************			4				
ORGANIC VAP TURB GEN (SOLAR)	LAR				A) 90					
GAS TURB GEN (SOLAR) I DEBOORDED FOR THE PROPERTY OF THE PROPE	LAR		•				***************************************			
PHOTOVOLTAIC (SOLAR) ICHTOCOCCOCCOCCOCCOCCCCCCCCCCCCCCCCCCCCC	LARUI						7) 80			9000000000000
#IND TURB GEN 10-11-00000000000000000000000000000000	10-11	B) .10800000E+09	00 0000000							B) 85 C) 95
WIND TURB GEN 10-51 000000000000000000000000000000000	10-51	8) 85	***************************************				=			
WIND TURB GEN 20-11-0000	20-11	811111111111111111111111111111111111111				8) 82				
WIND TURB GEN 20-51 DECEMBER OF THE PROPERTY O	20-51	2010	••••••			8				
FLYWHEEL STORAGE!	RAGE				8) 82					
BATTERY STORAGE!	RAGEI									
	•									

REQUIREMENT: 10 MW CONTINUOUS

	.0 .25 .5 .75 1.0 1.2	x 10	1.75 2.0	2.25
GAS TURB GEN - SC(CF); DOCUMENTO GAS TURB GEN - RC(CF); DOCUMENTO GAS TO	GAS TURB GEN - SC (CF):	-		
FUEL CELL - PHOS ACID (CF): GORGEOGROPOCCEGORGE STEAM TURB GEN - COAL (CF): GORGEOGROPOCCEGORGE	STEAM 150 ENG SEN (CF) 00000000000000000000000000000000000			
STEAM TURB GEN - OIL (CF)	STEAM TURB GEN - OIL (CF): 1000000000000000000000000000000000000		A	
STIRLING ENG GEN (CF) MHD GENERATOR (CF)	STIRLING ENG GEN (CF): GENERAL A 185 MHD GENERATOR (CF): GENERAL GENE			
STEAM TURB GEN (NF)	THERMIONIC GEN (CF):GOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGGO	06 (Y	1	
ORGANIC VAP TURB GEN (NF)				
GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) I	GAS TURB GEN (NF) A) 90 0150TOPE GEN (NF)			
STEAM TURB GEN (SOLAR)	STEAM TURB GEN (SOLAR) FORTINGENERAL CONTINUES OF A 190			
GAS TURB GEN (SOLAR)	VERSON DESCRIPTION OF THE PROPERTY OF THE PROP	V		
PHOTOVOLTAIC (SOLAR)	A) BO PHOTOVOLTAIC (SOLAR) : GENERAL PROPERTY CONTINUES	A) 80		
WIND TURB GEN 10-11400000008	WIND TURB GEN 10-11000000000000000000000000000000000	8) 85 C) 95		
WIND TURB GEN 20-116000008	11000000 11000000 110000			
WIND TURB GEN 20-51 FLYWHEEL STORAGE	WIND TURB GEN 20-5100000000000000000000000000000000000			
BATTERY STORAGE				

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	PARAMETER: 28 LC COST/YEAR
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ATTERY STORAGE	
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.0 .1 .2 .3 .4 00LLARS x 10 .0 .6 .0 .6 .0		MMD GENERATOR (CF) I describe to the control of the				8) 85 8) 85 19) 85 19) 85	
	GAS TURB GEN - SC(CF) 1000000000000000000000000000000000000	MHD GENERATOR (CF) 14 MHD/STEAM GEN (CF) 1 THERMIONIC GEN (CF) 16	ORGANIC VAP TURB GEN (NF) ! GAS TURB GEN (NF) !	STEAM TURB GEN (SOLAR) I	PHOTOVOLTAIC (SOLAR): G. 16200000	WIND TURB GEN 10-51 MIND TURB GEN 20-51 MIND T	FLYWHEEL STORAGE! BATTERY STORAGE!

EMEN.

3.5 4.0 4.5					V		W 111																	
YEARS x 10	A) 77 B) 85 C) 90	A) 77 B) 85 C) 90		=	***************************************	***************************************	A	A) 85 00000000000000000000	06.08	V.6000000000000000000000000000000000000	A190 or an				A0100000000000000000000000000000000000	86.4	VIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	A) 80		9.8	8.	=		
.0 .5 1.0 1.5 2.0 2.5 3.0	GAS TURB GEN - SC (CF) : 1000010010101010101010101010101010101	DIESEL GENERATOR (CF) ITTERTORESTONES OF THE STANDARD OF THE S	The second secon	FUEL CELL - PHOS ACID (CF): 400994400964444499864449464466	***************************************	STEAM TURB GEN - OIL (CF) IGEOGRAPHIC CONTRACTOR CONTRA	STIRLING ENG GEN (CF) : # # # # # # # # # # # # # # # # # #	MHD GENERATOR (CF) INCOMPANDATION OF THE PROPERTY OF THE PROPE	· 不 · · · · · · · · · · · · · · · · · ·	THERMIONIC GEN (CF) I STORES TO SECTION OF THE PROPERTY OF THE			A0000000000000000000000000000000000000		STÉAM TURR GEN (SOLAR) : PRESENCES DE PROPERTIES DE PROPER		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	700000817100000000000000000000000000000		***************************************	WIND TURB GEN 20-11-04-04-04-04-04-04-04-04-04-04-04-04-04-	***************************************		
	C(CF) 1	(66)	(CF)	CE	(cr)	(CF)	(66)	(CF)	CE	(3)	(NF)	(NF)	(NF)	(NF)	OLAR)	OLAR)	OLAR)	OLAR)	10-1	10-51	20-11	20-51	ORAGE	ORAGE
	GAS TURB GEN - S	DIESEL GENERATOR	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACTD	STEAM TURB GEN - COAL (CF) 1988	STEAM TURB GEN - OIL	STIRLING ENG GEN	MHD GENERATOR	MHD/STEAM GEN (CF)	THERMIONIC GEN	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF): 8488	RADIOISOTOPE GEN (NF) !	STEAM TURB GEN (S	ORGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR) 19800	PHOTOVOLTAIC (SOLAR) I BEGG	WIND TURB GEN 10-119000	WIND TURB GEN 10-519000	WIND TURB GEN	WIND TURB GEN 20-519888	FLYWHEEL STORAGE	BATTERY STORAGE

BATTERY STORAGE

WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE

GAS TURB GEN - RC	(CF)	GAS TURB GEN - RC(CF):0004000000000000000000000000000000000
DIESEL GENERATOR	5	DIESEL GENERATOR (CF): GEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
SPARK IGN ENG GEN (CF)	Ce	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
CELL - PHOS ACTO (CF)	CF	
IM TURB GEN - COAL (CF)	(3)	
AM TURB GEN - OIL (CF)	6	
STIRLING ENG GEN	(CF)	STIRLING ENG GEN (CF) : 00000000000000000000000000000000000
MHD GENERATOR (CF)	65)	A185
MHD/STEAM GEN (CF)	(65)	
THERMIONIC GEN (CF)	5	
STEAM TURB GEN (NF)	(NE	
SANIC VAP TURB GEN (NF)	(NF)	
GAS TURB GEN (NF) I BEGGE	(NF)	
RADIOISOTOPE GEN (NF)	(NF)	A 90
STEAM TURB GEN (SOLAR)	CAR	
IC VAP TURB GEN (SOLAR)	LAR	
GAS TURB GEN (SOLAR)	LAR	
PHOTOVOLTAIC (SOLAR)	(AR)	
WIND TURB GEN 10-11	100	
WIND TURB GEN 10-51	10-5	
WIND TURB GEN 20-11	20-1	

ORGANIC VAP TURB GEN (SOLAR)

CUBIC METERS

SPARK IGN ENG GEN (CF) FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) MHO/STEAM GEN (CF) THERMIONIC GEN (CF) STEAM TURB GEN (NF) ORGANIC VAP TURB GEN (NF)

	.0 .5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5
GAS TURB GEN - SCICF) !	
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	
SPARK IGN ENG GEN (CF)	
FUEL CELL - PHOS ACID (CF) !E	
STEAM TURB GEN - COAL (CF) A	18186 (185
STEAM TURB GEN - OIL (CF) IA	
STIRLING ENG GEN (CF)	
MHD GENERATOR (CF)	MHD GENERATOR (CF) INCOMPRESSESSESSESSESSESSESSESSESSESSESSESSESS
MHD/STEAM GEN (CF)	06(8
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR) IN	
ORGANIC VAP TURB GEN (SOLAR)	A190
GAS TURB GEN (SOLAR) 100	***************************************
PHOTOVOLTAIC (SOLAR) 188	
WIND TURB GEN 10-118	
MIND TURB GEN 10-5190	
WIND TURB GEN 20-118	
WIND TURB GEN 20-518	
FLYWHEEL STORAGE	6
BATTERY STORAGE!	

.6 .5 1.0	477 8) 85 C) 90 477 B) 85 C) 90 4) 77 B) 85 C) 90					A	C8/A																	
	GAS TURB GEN - SC (CF) 1000	DIESEL GENERATOR (CF):09000	FUEL CELL - PHOS ACID (CF) 10	STEAM TURE GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF)	MMP GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND 1.RB GEN 20-11	WIND TURB GEN 20-51	FLYWHEEL STORAGE!	BATTERY STORAGE!	

KILOGRAMS 2.0 2.5

A) 77 B) 85 C) 100000000000000000000000000000000000								
DIRECT GENERATOR (CF) 199 PARK ION ENG GEN (CF) 1	***********	2000000	COBBBBBBBB					
PARK ION ENG GEN (CF) !		A) 77	4)77 8)85 C)90					
SPARK ISN ENG GEN (CF) :	A	A)77 B)85 C)90	C) 90					
CELL . PHOS ACTO (CF) 188		A) 77						
	80000000000000000000000000000000000000	*********						
STEAM TURE GEN - COAL (CF) 1998		8)80 C)85	******	**********			1	
Vencenderenderenderenderenderenderenderen	***************************************	*******	*********	7600000000		A) 77		
STIRLING ENG GEN (CF) 10000	4.0000000000000000000000000000000000000	A	3	A) 77				
MHD GENERATOR (CF) secretaristic secretari	A) 85	*******	***************************************	7				
MHD/STEAM GEN (CF)!	B) .5500000E+08	80						8) 90
V THE STREET SEED TO SEE STREET SEED TO SEE STREET SEED TO SEED TO SEED THE SEED SEED TO SEED THE SEED SEED TO SEED THE SEED SEED SEED SEED SEED SEED SEED SE	*************	*******	988A					
STEAM TURB GEN (NF)!		A) 90						
ORGANIC VAP TURB GEN (NF)!								
GAS TURB GEN (NF)!								
RADIOISOTOPE GEN (NF)!								
STEAM TURB GEN (SOLAR)!								
ORGANIC VAP TURB GEN (SOLAR)!								
GAS TURB GEN (SOLAR)!								
PHOTOVOLTAIC (SOLAR)!								
WIND TURB GEN 10-11								
WIND TURB GEN 10-51								
WIND TURB GEN 20-11								
WIND TURB GEN 20-51								
FLYWHEEL STORAGE!								
BATTERY STORAGE!								
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REQUIREMENT: 10 MM CONTINUOUS

MIND TIDO GEN 30-E:

V. 3

10 MW Cont.

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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		HOL	distribution of	a sec				.0	, 'vo'	70,0	A. O. T.
SYSTEM	200	Kus	6	*	\$0.	+ 50	+ 40	200	4 65	ેં જ	. 4
GAS TURB GEN - SC (CF)	+	T	1.	1	T.	1	T.	T.	Г	Τ	T
GAS TURB GEN - RC (CF)	+	+=	0	0	-		0	0	+-	+	卡
DIESEL GENERATOR (CF)	+	+-	0	0		0	0	0	F	+	十
SPARK IGN ENG GEN(CF)	十	†	0	0	0	0			=	+	十
FUEL CELL - PHOS ACID (CF)	1									-	+
STEAM TURB GEN - COAL (CF)		-	0	0	8	•	0	-	•	0	恄
STEAM TURB GEN - OIL (CF)	1		0	0						0	+
STIRLING ENG GEN (CF)		†	0	0	0			0	۲	1	恄
MHD GENERATOR (CF)			0	0	•	0	0	-		1	广
MHD/STEAM GEN(CF)		丁	1	1		1	1	188	eur.	Ē	+
THERMIONIC GEN(CF)	1		0	0			0		1	17	T
STEAM TURB GEN(NF)	T		1	1			1	1	1	Ī	广
ORGANIC VAP TURB GEN(NF)				T		T				T	T
GAS TURB GEN (NF)	1		1-	1_	-	-		-	-	0	
RADIOISOTOPE GEN(NF)	7			T				T			Ť
STEAM TURB GEN (SOLAR)	-	•	-	-	-	-		1-	-	0	-
ORGANIC VAP TURB (SOLAR)							Ť		T	Ť	T
GAS TURB GEN (SOLAR)	1	-	-	-	-	-		-	-	F	T
PHOTOVOLTAIC (SOLAR)	-	-		-	-	_	-	1	-	-	1
WIND TURB GEN (ALL)	-	-	-	-	_	-	-	-	-	-	-
FLYWHEEL STORAGE	T			T			T		T	T	T
BATTERY STORAGE	1	T								1-	T

- - none

0 - minor

6 - moderate

major

10 MW Cont.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation

0 - minor limitation

major limitationoverriding limitation

			•				~	Y
SYSTEM	40	43x	40	E. E.	30	A. 5.	6, 20	* Si
GAS TURB GEN - SC (CF)	-	-	0	•	-	_	_	_
GAS TURB GEN - RC (CF)	_	_	0		_	_	L	-
DIESEL GENERATOR (CF)	-	_	_		-	-	_	_
SPARK IGN ENG GEN(CF)								
FUEL CELL - PHOS ACID(CF)	_				_		_	-
STEAM TURB GEN - COAL(CF)			•		-		_	1
STEAM TURB GEN - OIL(CF)			•			I		_
STIRLING ENG GEN(CF)	-		0				-	
MHD GENERATOR (CF)	0	0	0				_	-
MHD/STEAM GEN(CF)		8						-
THERMIONIC GEN(CF)	0	0	0					
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)								
GAS TURB GEN(NF)		-		0		-		_
RADIOISOTOPE GEN(NF)								
STEAM TURB GEN (SOLAR)				-		-		
ORGANIC VAP TURB (SOLAR)			Ť					100.00
GAS TURB GEN (SOLAR)	_	-	0	-		-	_	_
PHOTOVOLTAIC (SOLAR)	_	-	-				-	-
WIND TURB GEN 10-1	-	_	1_		-		-	
WIND TURB GEN 10-5	-		-		_		-	-
WIND TURB GEN 20-1	_		1_		_		-	_
WIND TURB GEN 20-5		-	-	-	I -		-	-
	1	1	1	1	1-	1	-	1
FLYWHEEL STORAGE	-	-	1	-	1			-

10 MW Cont.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation
- Characteristic has minor effect on system performance
- Characteristic has moderate effect on system performance
- Characteristic has major effect on system performance

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SYSTEM GAS TURB GEN - SC (CF) 0 0 0 GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) 0 0 0 0 0 SPARK IGN ENG GEN(CF) FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) 0 0 STEAM TURB GEN - OIL (CF) . STIRLING ENG GEN(CF) 0 0 0 0 0 MHD GENERATOR (CF) 0 MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN (NF) 0 0 0 0 0 RADIOISOTOPE GEN(NF) STEAM TURB GEN (SOLAR) 0 0 0 ORGANIC VAP TURB (SOLAR) GAS TURB GEN (SOLAR) 0 PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE BATTERY STORAGE

REQUIREMENT: 10 MW CONTINUOUS

1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5		A) 77 B) 65 C) 90	47.1A		C C C C C C C C C C C C C C C C C C C	10000000000000000000000000000000000000	V-000000000000000000000000000000000000	CB (Y		4011001101101101101101101101101101101101	0017		V 30001000000000000000000000000000000000	A) 90	VI					89-21-00-21-0		\$9.00		
S. 0						***************************************				i							***************************************	***************************************	1		************	*************		
	GAS TURB GEN - SC (CF)	GAS TURB GEN - RCICF) II	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACTO (CF) !	STEAM TURB GEN - COAL (CF) !!	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) !!	MHD GENERATOR (CF) !!	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) !!	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR) !!	RGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR) !!	PHOTOVOLTAIC (SOLAR) !!	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	FLYWHEEL STORAGE	RATTERY STORAGE

10 MW Cont

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	т
GAS TURB GEN - RC(CF)	F
DIESEL GENERATOR (CF)	т
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	F
STEAM TURB GEN - COAL(CF)	F
STEAM TURB GEN - OIL (CF)	F
STIRLING ENG GEN(CF)	Т
MHD GENERATOR (CF)	F
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	F
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	P
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	F
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	P. S. S. A. A.
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	
BATTERY STORAGE	

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BATTERY STORAGE!	

REQUIREMENT: 10 MW CONTINUOUS

PARAMETER

10 MW Cont.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	Not modular
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN COAL (CF)	Not modular
STEAM TURB GEN - OIL(CF)	Not modular
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	Not modular
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	Partly modular
STEAM TURB GEN (NF)	1224 1274 N
ORGANIC VAP TURB GEN (NF)	The state of the s
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	1-1450 ASC MARKS BUSH
STEAM TURB GEN (SOLAR)	Not modular
ORGANIC VAP TURB (SOLAR)	7 1 1 1 1 1 1 1 1 1
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	
BATTERY STORAGE	

10 MW Cont.

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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			E. C.	Der 1	650	370	e ~	c4 2	200
	7 4	etone still	6 3	6	2 40	400	THO	MO	of ,
SYSTEM	Ann	417	44	44	, CO	4th	\$0,	50	44
GAS TURB GEN - SC (CF)	0	•	0	_		0	•	_	_
GAS TURB GEN - RC (CF)	0	•	0	-	•	0	•	_	_
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	-	-
SPARK IGN ENG GEN(CF)					10	30			
FUEL CELL - PHOS ACID (CF)	1	1	_	-	0	•	1	-	-
STEAM TURB GEN - COAL (CF)	•	0	0	-	0	•	•	_	_
STEAM TURB GEN - OIL (CF)	•	0	0	The state of	0		•	_	_
STIRLING ENG GEN(CF)	0	0	0	-	0	0	•		
MHD GENERATOR (CF)	0	•		-	•		•	_	_
MHD/STEAM GEN(CF)						0.00			
THERMIONIC GEN(CF)	0	•	_	-		0	0	-	
STEAM TURB GEN(NF)									
ORGANIC VAP TURB GEN(NF)									
GAS TURB GEN(NF)	•	0	0	0			•	-	_
RADIOISOTOPE GEN(NF)		100							
STEAM TURB GEN (SOLAR)	•	0	0	-	0		•		
ORGANIC VAP TURB (SOLAR)									
GAS TURB GEN (SOLAR)	0	0	0	I -	0	0			
PHOTOVOLTAIC (SOLAR)	1-	0	-	-	0	-			-
WIND TURB GEN 10-1	0	0	•		0	-	-	-	
WIND TURB GEN 10-5	0	0	•	-	0	-	_	17	•
WIND TURB GEN 20-1	0	0	•	-	0	-	_		•
WIND TURB GEN 20-5	0	0	•		0				-
FLYWHEEL STORAGE	0	_		-	_		-		
BATTERY STORAGE	-	0	-		0	-	0	-	-

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

86

REQUIREMENT: 10 MW CONTINUOUS

3.5 4.0 4.5				Y	80 (B) 85 C) 95
2.0 2.5 3.0 3.					- The state of the	A) 90 A) 90	A) 80
	M 77 B) 85 C) 90	0E B) 80 C) 85 000000000000000000000000000000000000	V0000000000000000000000000000000000000			0	
GAS TURR GEN - SCICE)				ORGANIC VAP TURB GEN (NF) I GAS TURB GEN (NF) I	RADIOISOTOPE GEN (NF.)! STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR)!	

Control of the Walls

REQUIREMENT: 10 MM CONTINUOUS

x 10 x . 6 6.						**************************************	A) 77	A) 17		B) 90															
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•	GAS TURB GEN - SC (CF) 1998	GAS TURB GEN - RC (CF) 1888	DIESEL GENERATOR (CF) :	SPARK IGN ENG GEN (CF) !	FUEL CELL - PHOS ACID (CF) 188	STEAM TURB GEN - COAL (CF) 1400	STEAM TURB GEN - OIL (CF):000	STIRLING ENG GEN (CF) 1800	MHD GENERATOR (CF) 1881	MHD/STEAM GEN (CF) !	THERMIONIC GEN (CF) INN	STEAM TURB GEN (NF) !	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF) 1886	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR) 1991	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR) I DEB	PHOTOVOLTAIC (SOLAR)!	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	FLYWHEEL STORAGE!	The second secon

PARAMETER

10 MW Cont.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	None
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	The commence of the commence o
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL (CF)	None
STEAM TURB GEN - OIL (CF)	None
STIRLING ENG GEN(CF)	None
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	None
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN (NF)	V
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	None
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	Surface Surfac
BATTERY STORAGE	

Annual Control

SECTION VI

TEN MEGAWATT, 8 HOUR

REQUIREMENT

Power Level:

10 Mw

Operating Mode:

8 hours per day

Frequency/Phase:

60 Hz/3Ø

Voltage Level:

4160 V

BURNS AND ROE INC WOODBURY NY
USAF TERRESTRIAL ENERGY STUDY. VOLUME III. PART I. SUMMARY DATA--ETC(U)
MAY 78 D C HALL, A CARLSON, D FULLER, R REYER F33615-76-C-2171
AFAPL-TR-78-19-VOL-3-PT-1 NL AD-A061 071 UNCLASSIFIED 2 05 ADA 061071 \$#I

REGUIREMENT: 10 MW 8 HR

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A) 85	/
STEAM TURB GEN (NF)! ORGANIC VAP TURB GEN (NF)! GAS TURB GEN (NF)!	
RADIOISOTOPE GEN (NF)! STEAM TURB GEN (SOLAR)!####################################	
V 000000000000000000000000000000000000	
WIND TURB GEN 20-11 89.85 WIND TURB GEN 20-51 CONTROLLED CONTROLLE	

REQUIREMENT: 10 MW 8 HR

			٠.	57.	1977	1977 DOLLARS	x 10	1.75	2.0	2.25
GAS TURB GEN - SC(CF) FORTING GAS TURB GEN - RC(CF) FORTING DIESEL GENERATOR (CF) A) TANK IGN ENG GEN (CF)	77.1A 77.1A 77.1A	77 8) 85 C) 90								
FUEL CELL - PHOS ACID (CF) 100000 STEAM TURB GEN - COAL (CF) 1000000 STEAM TURB GEN - OIL (CF) 1000000 STIRLING ENG GEN (CF) 1000000000000000000000000000000000000	B) 80 C) 85 B) 80 C) 85 B) 80 C) 85 B) 85 B) 85 B) 85	C) 85 00000000000000 A) 77 00000 A) 77 A) 77	A 14 14 14 14 14 14 14 14 14 14 14 14 14	1						
MHD/STEAM GEN (CF) I		A) 85	A) 85		The state of the s	i				
STEAM TURB GEN (NF)! ORGANIC VAP TURB GEN (NF)!			elinants	FYOR Second Disc	A) 90					
GAS TURB GEN (NF) PROFILE RADIOISOTOPE GEN (NF)		A) 90								
STEAM TURB GEN (SOLAR) 00000 ORGANIC VAP TURB GEN (SOLAR)		V 90 (V	A) 90							
3 4		A) 80 40500000E+09					A)80 10CCT+++++++++++++++++++++++++++++++++++			A) 77 8) 85 C)
MIND TURB GEN 10-118-08-08-08-08-08-08-08-08-08-08-08-08-08	8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9									
FLYWHEEL STORAGE GOOGO	1 18	4180 8185 C190	961							

REQUIREMENT: 10 MW 8 HR

	0	7.	2	6.	1977 DOLLARS	x 10 6 6	6.
GAS TURB GEN - SCICF) 1000	A) 7		. 06				
GAS TURB GEN - RC(CF) 14071	A) 77	7 8) 85 C) 90	0				
SPARK IGN ENG GEN (CF)	1 A) 77						
FUEL CELL - PHOS ACID (CF) 100000							
STEAM TURB GEN - COAL (CF) 10000	18180	C) 85					
STEAM TURB GEN - OIL (CF) 1888	4	-	A				
STIRLING ENG GEN (CF) 10000							
MHD GENERATOR (CF) 10000	A) 85		***************************************	4 M			
MHD/STEAM GEN (CF)	-=	P. Bankson L.	A) 85				
THERMIONIC GEN (CF) : 00000				VIIII	V		
STEAM TURB GEN (NF)	- = .			A) 90			
ORGANIC VAP TURB GEN (NF)							
GAS TURB GEN (NF) 10000		i	V				
RADIOISOTOPE GEN (NF)	- =	A) 90	A SECTION AND A				
STEAM TURB GEN (SOLAR) I BEGR		A	-	A			
ORGANIC VAP TURB GEN (SOLAR)!	-=		A) 90				
GAS TURB GEN (SOLAR) I BOOM			A				
PHOTOVOLTAIC (SOLAR) I MAREN	-		-				VIII.
WIND TURB GEN 10-11000	Y	. 40500000E + 08	*08				A) 77 8) 85 C)
18) 85 WIND TURB GEN 10-5140000	18)85	-	6				
WIND TURB GEN 20-1:00008	1	985 3					
WIND TURB GEN 20-510000	51 6464	8000000					
FLYWHEEL STORAGE! 0000	E 18185	i	SECRETARIES CLOS	Separate Separate			
BATTERY STORAGE: BOOM	E		A) 77 B) 85	Andrews on the			

	0.	s.	1.0	1.5	YEARS 2.0	2.5	3.0	3.5	•••	4.5
GAS TURB GEN - SCICF)					F)	A) 77 B	A) 77 8) 85 C) 90			
GAS TURB GEN - RC(CT) Interestational Control of the Control of th						A) 77 B	A) 77 B) 85 C) 90			
SPARK IGN ENG GEN (CF):					77 (A					
FUEL CELL - PHOS ACID (CF) independence control of the control of					30000					
STEAM TURB GEN - COAL (CF) INCREMENDED TO THE TOTAL TOTAL TURB GEN - COAL (CF) INCREMENDED TO THE TOTAL TOTA	i			900000000000000000000000000000000000000					******	
STEAM TURB GEN - OIL (CF) PERFERENCE FOR	*****		********	*********	***************************************		************		7	
STIRLING ENG GEN (CF) I GEORGE CONTROLLE CONTR						¥ * * * * * * * * * * * * * * * * * * *		W 111		
MHD GENERATOR (CF) I GETTIAN CONTROLL CONTROL			*******	***************************************	A : 85		i			
MMD/STEAM GEN (CF)						A) 85				
THERMIONIC GEN (CF)	i			***************************************	V2000000000000000000000000000000000000		V			
STEAM TURB GEN (NF)						96 CV				
ORGANIC VAP TURB GEN (NF)										
GAS TURB GEN (NF) I DESTROCCIOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCO					A					
RADIOISOTOPE GEN (NF)				A) 90						
STEAM TURB GEN (SOLAR) I GENERAL GENER							*****			
ORGANIC VAP TURB GEN (SOLAR)						A) 90				
GAS TURB GEN (SOLAR) IGAGEGEOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOG							V			
PHOTOVOLTAIC (SOLAR) I DEBESSON DESCONDENCE DEBESSON DESCONDENCE					20000	A) 80				
WIND TURB GEN 10-11-011-011-011-011-011-011-011-011-0				8) 85 C) 95	95					
WIND TURB GEN 10-51 GEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG				i	90000					
8)85 WIND TURB GEN 20-1:00000000000000000000000000000000000				8) 85	8					
1 VIND TURB GEN 20-5: 1000000000000000000000000000000000000				8) 85						
FLYWHEEL STORAGE GOODS										
BATTERY STORAGE: 000000000000000000000000000000000000					A) 80 8) 85 C) 90	S C) 90				

BATTERY STORAGE!

	0.	1.0	1.5	CUBIC METERS	3.0 10	3.5
GAS TURB GEN - SC (CF) - S			996800000			
GAS TURB GEN - RC(CF): ESCRETERES CONTROL OF THE CO			0612 681	000000000000000000000000000000000000000		
DIESEL GENERATOR (CF)		*********	***************************************	DIESEL GENERATOR (CF) : ###################################	4	
SPARK IGN ENG GEN (CF.)				M.M.		
FUEL CELL - PHOS ACID (CF)						
STEAM TURB GEN - COAL (CF)						
STEAM TURB GEN - OIL (CF)						
STIRLING ENG GEN (CF)		***************************************		STIRLING ENG GEN (CF); deregggerenden en e		
MHD GENERATOR (CF.)	1637 01345 18 1			A) 85		
MHD/STEAM GEN (CF)						
THERMIONIC GEN (CF)						
STEAM TURB GEN (NF)						
ORGANIC VAP TURB GEN (NF)						
GAS TURB GEN (NF) I GEGGEA	1					
RADIOISOTOPE GEN (NF)	0664					
STEAM TURB GEN (SOLAR)						
ORGANIC VAP TURB GEN (SOLAR)						
GAS TURB GEN (SOLAR)	E January Communication of the					
PHOTOVOLTAIC (SOLAR)						
WIND TURB GEN 10-1						
WIND TURB GEN 10-51						
WIND TURB GEN 20-11						
WIND TURB GEN 20-51						
FLYWHEEL STORAGE						

Contract Contract

REQUIREMENT: 10 MM 8 MR

	0.	.25	S.	.75	SQUARE METERS	METERS 1.25	1.5	1.75	2.0	2.25
GAS TURB GEN - SC (CF)	_									
GAS TURB GEN - RC(CF)										
DIESEL GENERATOR (CF)										
SPARK IGN ENG GEN (CF)										
FUEL CELL - PHOS ACTO (CF)	F) IE									
STEAM TURB GEN - COAL (CF)	F) 16A	6								
STEAM TURB GEN - OIL (CF)	FILA									
STIRLING ENG GEN (CF)										
MHD GENERATOR (CF.)		F) : 444400000000000000000000000000000000	***************************************	*******						
MHD/STEAM GEN (CF)			A) 85							
THERMIONIC GEN (CF)										
STEAM TURB GEN (NF)										
ORGANIC VAP TURB GEN (NF)										
GAS TURB GEN (NF)										
RADIOISOTOPE GEN (NF)										
STEAM TURB GEN (SOLAR) I DES CONTROLLES CONT										
ORGANIC VAP TURB GEN (SOLAR)	4.	.42000000E+06	90							A) 90
GAS TURB GEN (SOLAR)										
PHOTOVOLTAIC (SOLAR): 104889944679968944186898411679689611684898989898989898988888888888888										
WIND TURB GEN 10-1	-110000000						8) 85			
WIND TURB GEN 10-5	-5100000	8								
WIND TURB GEN 20-1	-116165									
WIND TURB GEN 20-510000	18) 85									
FLYWHEEL STORAGEIG	6 6 9		•							
BATTERY STORAGEID	08 (V)	1 A) 80 B) 85 C) 90								
	1 A) 77 8) 85	3) 85								

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GAS TURB GEN - SC (CF) 1900		***************************************	
	F) 100006		
GAS TURB GEN - RC(CF) 1680			
DIESEL GENERATOR (CF) 1000	A		
SPARK IGN ENG GEN (CF)			
FUEL CELL - PHOS ACID (CF) 10000	36.000000000000000000000000000000000000		
STEAM TURB GEN - COAL (CF)			
STEAM TURB GEN - OIL (CF)			
STIRLING ENG GEN (CF) 1800	F)		
MHD GENERATOR (CF)	à		
MHD/STEAM GEN (CF)			
THERMIONIC GEN (CF)			
STEAM TURB GEN (NF)	•		
ORGANIC VAP TURB GEN (NF)			
GAS TURB GEN (NF)			
RADIOISOTOPE GEN (NF)			
STEAM TURB GEN (SOLAR)	i (g)	,	
ORGANIC VAP TURB GEN (SOLAR)	169		
GAS TURB GEN (SOLAR)!	(B)		
PHOTOVOLTAIC (SOLAR)	A DESCRIPTION OF THE PROPERTY		
WIND TURB GEN 10-11			
WIND TURB GEN 10-51	1-51		
WIND TURR GEN 20-11	- - -		
WIND TURR GEN 20-51	15-1		
FLYWHEEL STORAGE	1301		
BATTERY STORAGE 1000		. 25920006-07	A) 77 B) 85

REQUIREMENT: 10 MW 8 HR

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GAS TURB GEN - SC (CF) 1000000000000000000000000000000000000			
GAS TURB GEN - RCICFII	GAS TURB GEN - RC (CF) CONTROLLE A 77 B 85 C 90		
DIESEL GENERATOR (CF) ! POSTOROGOUS	A) 77 B) 85 C) 90		
SPARK IGN ENG GEN (CF)!	Ha		
FUEL CELL - PHOS ACTO (CF) 16	ACID (CF) INCOMPRESSION OF THE PROPERTY OF THE		
STEAM TURB GEN - COAL (CF)			
STEAM TURB GEN - OIL (CF) !	- 01L (CF) 1000000000000000000000000000000000000		
STIRLING ENG GEN (CF) I DOCTOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC	**************************************		
MHD GENERATOR (CF)!	A) 85		
MHD/STEAM GEN (CF)!			

STEAM TURB GEN (NF) !	A) 90		
ORGANIC VAP TURB GEN (NF)!			
GAS TURB GEN (NF)!			
RADIOISOTOPE GEN (NF)!			
STEAM TURB GEN (SOLAR)!			
DRGANIC VAP TURB GEN (SOLAR)!			
GAS TURB GEN (SOLAR)!			
PHOTOVOLTAIC (SOLAR)!			
WIND TURB GEN 10-11			
WIND TURB GEN 10-51			
WIND TURB GEN 20-11			
WIND TURB GEN 20-51			
FLYWHEEL STORAGE!			
BATTERY STORAGE!			

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		()	5	-	100	100	(67)	(CF)	100	- 66	5	S.	- CNF	S -	S	OLAR	OLAR	OLAR	OLAR	-	-	-02	-02	
			ATOR	S GEN	ACIO	COAL	- 011	3 GEN	PATOR	1 GEN	C GEN	3 GEN	3 GEN	3 GEN	E GEN	EN (S	S) N3	S) N	S) 31	9 GEN	3 GEN	S GEN	GEN	
	GAS TURB GEN - SC	GAS TURB GEN - RC	DIESEL GENERATOR	SPARK IGN ENG GEN	PHOS	EN -	GEN	STIRLING ENG GEN	MHD GENERATOR	MHD/STEAM GEN	THERMIONIC GEN	STEAM TURB GEN	15 E	GAS TURB GEN	RADIOISOTOPE GEN	STEAM TURB GEN (SO	RB GE	GAS TURB GEN (SO	PHOTOVOLTAIC (SO	WIND TURB GEN	WIND TURB GEN	WIND TURB GEN	WIND TURB GEN	
	2 E	2	SEL	1 1G	- 1	IRB G	- CRB	RL IN	P.	MHO/	HERM	TEAM	VAP	GAS	2101	5	5	S TU	OTO	NIN	NIN	WIND	MIND	
	6A9	6A9	010	SPAR	FUEL CELL - PHOS ACTO	STEAM TURB GEN - COAL	STEAM TURB GEN - OIL	ST				5	ORGANIC VAP TURB GEN		RAG	STEA	PREAVIC VAP TURB GEN (SO	3	4					
					FUEL	STE	STE						OR				BAN							

10 MW 8 Hr.

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	E.C.	Ku	0	*c	\$0,	+ 50	+ 40	A 40	, esc	ે જ	. 4
GAS TURB GEN - SC (CF)	+	T	10	10	T	1.	T.	T.	Τ	Τ	T
GAS TURB GEN - RC (CF)	十	✝−	1	0		-	0	0	+	+-	+
DIESEL GENERATOR (CF)	亡	-	0	0		0	0	0	-	1	+
SPARK IGN ENG GEN(CF)	十	1	10	10		0	0	0	1	-	-
FUEL CELL - PHOS ACID(CF)	1	1_									1
STEAM TURB GEN - COAL(CF)	ŧ	-	0	0	9	•	0	•	•	0	-
STEAM TURB GEN - OIL (CF)	†	1	0	0		•			1	0	=
STIRLING ENG GEN(CF)	+	1	0	0	0	0	0			1	广
MHD GENERATOR (CF)	1	+	0	0		0	0		Ī	1	Ť
MHD/STEAM GEN(CF)	1	1	1	1	1	1	1			1	+
THERMIONIC GEN(CF)	1		0	0	1		0		+-		
STEAM TURB GEN(NF)	†	1	1	1	1		1	1		1	Ť
ORGANIC VAP TURB GEN(NF)	1			1		1					+
GAS TURB GEN(NF)	†		†-					1		0	
RADIOISOTOPE GEN(NF)	1	۲		+		F	1		Ť	1	1
STEAM TURB GEN (SOLAR)	1_	•	1_	-				-		0	1
ORGANIC VAP TURB (SOLAR)	1	1		1	Ť	-	1	1	F	1	F
GAS TURB GEN (SOLAR)	1	1	1								
PHOTOVOLTAIC (SOLAR)	-	1-			1		-		E		1
WIND TURB GEN (ALL)	1	-	1-	E	-		T	Ē	Ē	t	t
FLYWHEEL STORAGE	1				1		Ē		E	E	F
BATTERY STORAGE	1	-	-	-	-	-	-		-	-	1
		-		-	10	0					

- - none

0 - minor

0 - moderate

• - major

10 MW 8 Hr.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation

0 - minor limitation• - major limitation

- overriding limitation

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et et	Y 7	20 6	200	c.	

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	4	14	1	1	1	7.	~	Ť
GAS TURB GEN - SC (CF)	=	-	0	•	-	-	-	-
GAS TURB GEN - RC (CF)	_	-	0	•	-	-	-	-
DIESEL GENERATOR (CF)	-	-	_	•	_	_	_	_
SPARK IGN ENG GEN(CF)								
FUEL CELL - PHOS ACID(CF)	_	_	_		_		_	_
STEAM TURB GEN - COAL(CF)					_			_
STEAM TURB GEN - OIL (CF)					_	_		_
STIRLING ENG GEN(CF)	-	-	0	•	-	_	_	-
MHD GENERATOR (CF)	0	0	0	•	-	-	_	_
MHD/STEAM GEN(CF)								
THERMIONIC GEN(CF)	0	0	0		-		_	-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)								
GAS TURB GEN(NF)		-	•	0	-	-		-
RADIOISOTOPE GEN(NF)								
STEAM TURB GEN (SOLAR)				_		-	1_	-
ORGANIC VAP TURB (SOLAR)								
GAS TURB GEN (SOLAR)	-	-	0	-		-	-	-
PHOTOVOLTAIC (SOLAR)	-	-		-		_		
WIND TURB GEN 10-1	-	1_	1-	-	-			-
WIND TURB GEN 10-5	-	-	1	-	-			
WIND TURB GEN 20-1	-	1_	1_					
WIND TURB GEN 20-5	-	-	-	-	-			
FLYWHEEL STORAGE								
BATTERY STORAGE	-	0	=	1	-			

10 MW 8 Hr.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

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SYSTEM	& K	Par	Dec	De.	076	De	2,0
GAS TURB GEN - SC (CF)	•	0	-	_	0	0	0
GAS TURB GEN - RC (CF)	0	0	-	-	0		0
DIESEL GENERATOR (CF)	0	0	-	-	0	0	0
SPARK IGN ENG GEN(CF)							
FUEL CELL - PHOS ACID(CT)	_	_	-	-	-	24	-
STEAM TURB GEN - COAL(CF)	•	0	-	-	0	e	0
STEAM TURB GEN - OIL (CF)	0	0	_	_			
STIRLING ENG GEN(CF)	0	0	-	_	0	0	0
MHD GENERATOR (CF)	0	0	-	-	•	-	-
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-	0	0	0
STEAM TURB GEN(NF)							
ORGANIC VAP TURB GEN(NF)							
GAS TURB GEN(NF)	0	0	_	_		0	0
RADIOISOTOPE GEN(NF)							
STEAM TURB GEN (SOLAR)	0	0	•	-	0	0	0
ORGANIC VAP TURB (SOLAR)				70.7			
GAS TURB GEN (SOLAR)	-	-		-	0	-	-
PHOTOVOLTAIC (SOLAR)	_	-	•	-	-	-	-
WIND TURB GEN 10-1	-	-	-		-	-	-
WIND TURB GEN 10-5	_	_	-		-	-	-
WIND TURB GEN 20-1	_	-	-		-	-	-
WIND TURB GEN 20-5	_	_	-		-	-	1_
FLYWHEEL STORAGE	_	_	-	-	-	-	-
BATTERY STORAGE	-	-	-	1-	-	1-	-

10. MW 1 Hr.

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

Ints

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SYSTEM	4	50,	De	De	03	De	Y
GAS TURB GEN - SC (CF)		0	-	_	0	0	0
GAS TURB GEN - RC (CF)	•	0	_	-	0		0
DIESEL GENERATOR (CF)	0	0	-	-	0	10	0
SPARK IGN ENG GEN(CF)							
FUEL CELL - PHOS ACID(CF)	_	_	_	_	-		-
STEAM TURB GEN - COAL(CF)		0	_	_	0	0	
STEAM TURB GEN - OIL (CF)	0	0		-	6	0	0
STIRLING ENG GEN(CF)	0	0	_	-	0	0	0
MHD GENERATOR (CF)	0	0		-	•	-	_
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	_	_		0	0
STEAM TURB GEN(NF)							
ORGANIC VAP TURB GEN(NF)							
GAS TURB GEN(NF)	0	0	i.	- 8	0	0	0
RADIOISOTOPE GEN(NF)							
STEAM TURB GEN (SOLAR)	0	0		-	0	0	0
ORGANIC VAP TURB (SOLAR)							٦
GAS TURB GEN (SOLAR)	-	_		ă.	0	-	-
PHOTOVOLTAIC (SOLAR)	_	_	•		-	-	-
WIND TURB GEN 10-1	_	-		•	30	_	_
WIND TURB GEN 10-5			14/				
WIND TURB GEN 20-1	-		_				
WIND TURB GEN 20-5							
FLYWHEEL STORAGE	_			-	_		-
BATTERY STORAGE	-	-	-	=	-	-	-
	I	3				1	1

REQUIREMENT: 10 MW 8 HR

10000000000000000000000000000000000000	77 8185 C190		8)80 C)85		A) 85													
	RC (CF) 000044404000000000000000000000000000	A) 77		A) 77 CCCCCCCCCCCA A) 77	V		***************************************			A1000000000000000000000000000000000000		A) 90	***************************************	A) 80	8) 85	8	8) 85	
GAS TURB GEN - SCICE) IREGO	GAS TURB GEN - RCICE) DESEL GENERATOR (CF)		FUEL CELL - PHOS ACID (CF) 19989 STEAM TURB GEN - COAL (CF) 1998	STEAM TURB GEN - OIL (CF) 100	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	ORGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)				FLYWHEEL STORAGE! 000

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10 MW 8 HR.

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	т
GAS TURB GEN - RC(CF)	F
DIESEL GENERATOR (CF)	Т
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	F
STEAM TURB GEN - COAL(CF)	F
STEAM TURB GEN - OIL (CF)	F
STIRLING ENG GEN(CF)	T
MHD GENERATOR (CF)	F
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	F
STEAM TURB GEN(NF)	<u>-</u>
ORGANIC VAP TURB GEN(NF)	<u> </u>
GAS TURB GEN(NF)	F
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	F
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	2 p 1 4 8 6
PHOTOVOLTAIC (SOLAR)	4 1 F 3 3 8 4
WIND TURB GEN 10-1	3 8 F V 3 A 3
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	F
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	F
BATTERY STORAGE	F

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	GAS TURB GEN - SCICF) 16	GAS TURB GEN - RC (CF) 19E	DIESEL GENERATOR (CF) 1A	SPARK IGN ENG GEN (CF) !	(CF)	(CF)	3	STIRLING ENG GEN (CF) IA	MHD GENERATOR (CF) IA	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	(NF)	GAS TURB GEN (NF) 100	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR) 100	LAR	GAS TURB GEN (SOLAR) IN	PHOTOVOLTAIC (SOLAR) IE	WIND TURB GEN 10-118	WIND TURB GEN 10-518	WIND TURB GEN 20-118	WIND TURB GEN 20-518	FLYWHEEL STORAGEIG	BATTERY STORAGEID	
	5 - 7	ă ı	RATOR	S GEN	ACID	COAL	- OIL	S GEN	PATOR	4 GEN	GEN	9 GEN	B GEN	B GEN	GEN	N (S	S (S	S) N3	10 (50	B GEN	B GEN	9 GEN	S GEN	EL ST	N ST	
	39 GE1	39 BE	GENE	SN EN	PHOS	3EN -	GEN .	NG EN	GENE	STEA	INOI	1 TURE	TURE	S TURE	SOTOP	JRB GE	JRB GE	JRB 64	VOLTA!	TURE	TUR!	TURE	TURE	YWHE	BATTE	
	NS TUR	NS TUR	IESEL	ARK 10	בור -	LURB (TURB	TRLI	H	MHD	THER	STEA	IC VAF	GA S	10101	EAM TO	IAP TI	SAS TI	HOTO	MIN	NI N	MIN	NI N	•		
	3	9	6	SP	FUEL CELL - PHOS ACID (CF) 148	STEAM TURB GEN - COAL (CF) 186	STEAM TURB GEN - OIL (CF) 100	5					ORGANIC VAP TURB GEN (NF)		à	STE	ORGANIC VAP TURB GEN (SOLAR)		No.							
					2	8											086									

REGULREMENT: 10 MW 8 HR

PARAMETER

10 MW 8 Hr.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	Not modular
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN .ENG GEN (CF)	The second secon
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	Not modular
STEAM TURB GEN - OIL(CF)	Not modular
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	Not modular
MHD/STEAM GEN(CF)	_ f_ t
THERMIONIC GEN(CF)	Partly modular
STEAM TURB GEN (NF)	A THE POLY OF THE PROPERTY BALL
ORGANIC VAP TURB GEN (NF)	a a s a la l
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	Not modular
ORGANIC VAP TURB (SOLAR)	And the second s
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully medular

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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GAS TURB GEN - SC (CF)	0	•	0	-		0		-	-	
GAS TURB GEN - RC (CF)	0	•	0	-	•		•	-	-	
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	-	_	•
SPARK IGN ENG GEN(CF)		10.8								0
FUEL CELL - PHOS ACID(CF)	_	_	-	-	0	7.6	_	-		
STEAM TURB GEN - COAL (CF)	•	0	0	-	0	•		-		
STEAM TURB GEN - OIL (CF)	•	0	0	Con	0		•	-	_	
STIRLING ENG GEN(CF)	0	0	0	-	0	0	•	-	-	
MHD GENERATOR (CF)	0	•	-	-	•			-	_	•
MHD/STEAM GEN(CF)										
THERMIONIC GEN(CF)	0	•	-	-		0	0	-	-	
STEAM TURB GEN(NF)										
ORGANIC VAP TURB GEN(NF)	0	0	0	0	-	0	•	-	-	
GAS TURB GEN(NF)	•	0	0	0	_			-	-	
RADIOISOTOPE GEN(NF)						11121				
STEAM TURB GEN (SOLAR)	•	0	0	-	0	•	•	•	_	
ORGANIC VAP TURB (SOLAR)	Day				16.					
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	-	•	_	
PHOTOVOLTAIC (SOLAR)	-	0	-	_	0	96	-		_	
WIND TURB GEN 10-1	0	0	•	-	0	-	-	-	•	
WIND TURB GEN 10-5	0	0	•	-	0	_	-	-	•	
WIND TURB GEN 20-1	0	0	•	-	0	-	-	-	•	
WIND TURB GEN 20-5	0	0	•	-	0	-	-	-	•	
FLYWHEEL STORAGE	0	_	•	-	-	-		-	_	
BATTERY STORAGE	1-	0	-	_	0	_	-			

- Condition does not exist in system
- 0 Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- e Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

REGUIREMENT: 10 MW 8 HR

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GAS TURB GEN - SC (CF) 1886 GAS TURB GEN - RC (CF) 1886 OIESEL GENERATOR (CF) 1887	8 7 4 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	A177 8185 C190 A177 8185 C190 A177 8185 C190 A177						
FUEL CELL - PHOS ACID (CF) 108 STEAM TURB GEN - COAL (CF) 1000000		A) 17 (A	i					
STIRLING ENG GEN (CF) 14 1 A) B5 MHD GENERATOR (CF) 199600000000000000000000000000000000000	1	V						
THERMIONIC GEN (CF) 1000000000000000000000000000000000000		A) 90	i					
ORGANIC VAP TURB GEN (NF)! GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)!				96(7				
STEAM TURB GEN (SOLAR) I GENALOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOG						A) 90	4	
GAS TURB GEN (SOLAR): OPERFORMED TO CONTROLL OF THE A) BO PHOTOVOLTAIC (SOLAR): OPERFORMED TO CONTROLL OF THE OPERFORMED TO CO				A) 80	¥		i	:
MIND TURB GEN 10-116008 18) 65 MIND TURB GEN 10-516008 WIND TURB GEN 20-116008	18) 85 18) 85 18) 85						8) 85 C) 95	
WIND TURB GEN 20-5190 18)	8) 85 18) 85 18) 85	entertation and a second						
BATTERY STORAGE 180	100 140 177 8185	A) 80 8) 85 C) 90						

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REGUIREMENT: 10 MW 8 HR

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GAS TURB GEN - SCICE	GAS TURB GEN - SC (CF) 100000000000000000000000000000000000	A) 77 8) 85 C) 90			
DIESEL GENERATOR (CF) 1988		A)77 B)85 C)90			
SPARK IGN ENG GEN (CF)!	公相传 · · · · · · · · · · · · · · · · · · ·				
FUEL CELL - PHOS ACID (CF) 1888	*************	998			
STEAM TURB GEN - COAL (CF) : BEER			••••••	•	
STEAM TURB GEN - OIL (CF	STEAM TURB GEN - OIL (CF) INTRACTOR CONTROL CO			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	
STIRLING ENG GEN (CF) ! FORE	V		A) 77		
MHD GENERATOR (CF) 19888		A. 855 A. 2000 C. 2000	***************************************		
MHD/STEAM GEN (CF)	1 A) .1100000E+09				A) 85
THERMIONIC GEN (CF) 1998	VIIII	VIIIIIIII			
STEAM TURB GEN (NF)	A Charlest of the way as a vessel of a	A) VO.			
ORGANIC VAP TURB GEN (NF)					
GAS TURB GEN (NF) 10000	VI.000000000000000000000000000000000000	A			
RADIOISOTOPE GEN (NF)	10年の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の	D6 (V			
STEAM TURB GEN (SOLAR) I BREE	***************************************				
ORGANIC VAP TURB GEN (SOLAR)!	1 A) .1160000E+09				96 (V
GAS TURB GEN (SOLAR) I BERE	V	V			
PHOTOVOLTAIC (SOLAR)		A) 80			
WIND TURB GEN 10-11	I see tags to extra the up.				
WIND TURB GEN 10-51	· ·				
WIND TURB GEN 20-11					
WIND TURB GEN 20-51					
FLYWHEEL STORAGE	E 95.35 85 82 85.80				
BATTERY STORAGE!					

PARAMETER

10 MW 8 Hr.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	None
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL (CF)	None
STEAM TURB GEN - OIL (CF)	None
STIRLING ENG GEN(CF)	None None
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN (NF)	None
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	None
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	None
BATTERY STORAGE	possibly lead for conventional batteries

SECTION VII

TEN MEGAWATT, 1 HOUR

REQUIREMENT

Power Level: 10 Mw

Operating Mode: 1 hour per day

ESTABLISHED STATES

Frequency/Phase: 60 Hz/3Ø

Voltage Level: 4160 V

REGUIREMENT: 10 MW 1 HR

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	GAS TURB GEN - SC(CF)	DIESEL GENERATOR (CF)	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACID (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF)	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	TODAGE STORAGE	1 4)80 8

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GAS TURB GEN - SC(CF) 1900 GAS TURB GEN - RC(CF) 1900 DIESEL GENERATOR (CF) 1900 SPARK 16N ENG GEN (CF) 1	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77
STEAM TURB GEN - COAL (CF) 1996 STEAM TURB GEN - OIL (CF) 1996 STIRLING ENG GEN (CF) 1996	
MHD/STEAM GEN (CF)	A) 85
STEAM TURB GEN (CF) A) STEAM TURB GEN (NF) GAS TURB GEN (NF) RADIOISOTOPE GEN (NF)	A) .65400000E.08 A) .65400000E.08 A) 90
ORGANIC VAP TURB GEN (SOLAR) I GORGANIC VAP TURB GEN (SOLAR) I GAS TURB GEN (SOLAR) I GORGAN	4
WIND TURB GEN 10-11000 WIND TURB GEN 20-51000 WIND TURB GEN 20-51000 FLYWHEEL STORAGE: 001	B) 85 C) 95 B B) 85 C) 90 B B) 90 B B) 85 C) 90 B B) 9

REGUIREMENT: 10 MW 1 HR

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GAS TURB GEN - SC(CF) GAS TURB GEN - RC(CF) SPARK IGN ENG GEN (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STEAM TURB GEN - OIL (CF) STEAM TURB GEN (CF) HHD/STEAM GEN (CF) THERMIONIC GEN (CF) GAS TURB GEN (NF) GAS TURB GEN (NF) RADIOISOTOPE GEN (NF)		A) 77 8) 85 C) 90 A) 77 8) 85 C) 90 A) 77 A) 77 A) 77 A) 85 A) 85 A) 95 A) 99	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) 77 A) 77 A) 85			A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) 77 A) 77 A) 85 A) 90 A) 90 A) 90			V) 90	
ORGANIC VAP TURB GEN (SOLAR) GAS TURB GEN (SOLAR)		A) .2705000E+07	A) .27050000E+07							A) 90 A) 90 A) 90 A) 80
WIND TURB GEN 10-11 WIND TURB GEN 20-11 WIND TURB GEN 20-11 WIND TURB GEN 20-51 FLYWHEEL STORAGE		9) .3150000E+07								B) 31500000E+07 B) 85 C) 95 B) 85 B)

V.Martin

REQUIREMENT: 10 MW 1 HR
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GAS TURB GEN - SC (CF) : GEGEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG		**********			A177 R185 C190	90			
GAS TURB GEN - RC (CF) Deserge D		***************************************	***********	***********	A177 B185 C100	9			
DIESEL GENERATOR (CF) 1888		VARCET 000000000000000000000000000000000000	**********	************			4		
SPARK IGN ENG GEN (CF)					2	A) 1.4			
FUEL CELL - PHOS ACID (CF): second se	***************************************			3000					
STEAM TURB GEN - COAL (CF) ISSESSESSESSESSESSESSESSESSESSESSESSESSE		***************************************	***********	***************************************	***************************************			***	
STEAM TURB GEN - OIL (CF) 1988		V1000000000000000000000000000000000000	**********	**********	*************			*	
STIRLING ENG GEN (CF) I		V	***********	-	4		1114		
MHD GENERATOR (CF) 1000		A 1 8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	***********	A) 85		4			
MHD/STEAM GEN (CF)					A) 85				
THERMIONIC GEN (CF) : 000		V				4			
STEAM TURB GEN (NF)					A) 90				
ORGANIC VAP TURB GEN (NF)									
GAS TURB GEN (NF) 1988		V	**********		100000000	4			
RADIOISOTOPE GEN (NF) !					A) 90				
STEAM TURB GEN (SOLAR) I 888		V 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	***********			4.			
ORGANIC VAP TURB GEN (SOLAR)!					A) 90				
GAS TURB GEN (SOLAR) I GU			**********	***************************************		4.			
PHOTOVOLTAIC (SOLAR) I DEBEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG			***********	2	A) 80				
WIND TURB GEN 10-1:04000004400000044000000000000000000			8) 85 C) 95						
#IND TURB GEN 10-5144444444444444444444444444444444444			8)85	800					
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FLYWHEEL STORAGE: OGGODGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG			50 (9		900				
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FLYWHEEL STORAGE! BATTERY STORAGE!

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GAS TURB GEN - SCICF) IE						
GAS TURB GEN - RC(CF)!	A) 77 B) 85 C) 90	900000000000000000000000000000000000000				
DIESEL GENERATOR (CF)		A) 77 B) 85 C) 90	A			
SPARK IGN ENG GEN (CF)	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	11.04				
FUEL CELL - PHOS ACID (CF)						
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STEAM TURB GEN - OIL (CF)	の一般のできない。					
STIRLING ENG GEN (CF)	V		.			
MHD GENERATOR (CF)		A) 85				
MHD/STEAM GEN (CF)						
THERMIONIC GEN (CF)						
STEAM TURB GEN (NF)						
ORGANIC VAP TURB GEN (NF)						
GAS TURB GEN (NF)	•					
RADIOISOTOPE GEN (NF)	06.7					
STEAM TURB GEN (SOLAR)!	计算机 化二氯甲基乙基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲					
ORGANIC VAP TURB GEN (SOLAR)						
GAS TURB GEN (SOLAR)						
PHOTOVOLTAIC (SOLAR)						
WIND TURB GEN 10-11						
WIND TURB GEN 10-51						
WIND TURB GEN 20-11						
WIND TURB GEN 20-51						
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REGUIREMENT: 10 MW 1 HR

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GAS TURB GEN - SC	SC (CF) !							
GAS TURB GEN - RC(CF)	(CF)							
DIESEL GENERATOR	(CF)							
SPARK IGN ENG GEN	(P)							
UEL CELL - PHOS ACTO	(CF) IE							
TEAM TURB GEN - COAL	(CF) 1000A	83 80 C) 85						
STEAM TURB GEN - OIL	(CF) I							
STIRLING ENG GEN	(6)	A) 77						
MHD GENERATOR	(CF)	(CF)	V0000000000000000000000000000000000000	***************************************	1			
MHD/STEAM GEN	(CF)			A) 85				
THERMIONIC GEN	GE .							
STEAM TURB GEN	- (a)							
ORGANIC VAP TURB GEN	S. C.							
GAS TURB GEN	(NF)							
RADIOISOTOPE GEN (NF)	(NF)							
STEAM TURB GEN (SOL	AR	***************************************		***************************************	STEAM TURB GEN (SOLAR): PARAGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEG			
ANIC VAP TURB GEN (SOLAR)	AR)	47 .1360000E	8					
GAS TURB GEN (SOLAR) I DECEMBER COLORDON	AR)	A) 80	1					
PHOTOVOLTAIC (SOL	AR) 14	***************************************		••••••	PHOTOVOLTAIC (SOLAR) interentational professional profess		30000000000	₩
WIND TURB GEN 10-110		8) 85 8) 85					61 63 61 63	
WIND TURB GEN 20-11-000-	20-114	8) 85						
WIND TURB GEN 20-5100008	20-51	8182						
FLYWHEEL STORAGEIG	PAGEIG	9185	2011年の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の					
BATTERY STORAGEID	RAGEIC	A) 80 8) 85 C) 90	0					

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GAS TURB GEN - SC (CF) 1000000000000000000000000000000000000		
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DIESEL GENERATOR (CF): #4000000000000000000000000000000000000		
SPARK IGN ENG GEN (CF)	1	
FUEL CELL - PHOS ACID (CF)	FUEL CELL - PHOS ACID (CF) IGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	
STEAM TURB GEN - COAL (CF)	8) 80 C) 92	
STEAM TURB GEN - OIL (CF)		
STIRLING ENG GEN (CF)	STIRLING ENG GEN (CF) : GORFOGORDOGORDO	
MHD GENERATOR (CF)	A) 85	
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF)		
STEAM TURB GEN (NF)		
ORGANIC VAP TURB GEN (NF)		
GAS TURB GEN (NF)		
RADIOISOTOPE GEN (NF)		
STEAM TURB GEN (SOLAR)		
RGANIC VAP TURB GEN (SOLAR)		
GAS TURB GEN (SOLAR)		
PHOTOVOLTAIC (SOLAR)		
WIND TURB GEN 10-11		
WIND TURB GEN 10-51		
WIND TURB GEN 20-1		
WIND TURB GEN 20-51		
FLYWHEEL STORAGE		
BATTERY STORAGE	BATTERY STORAGE: 04040010000000000000000000000000000000	***************************************
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ORGANIC VAP TURB G

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GAS TURB GEN - SCICE	GAS TURB GEN - SCICF) : COGFORD CONTROL CONTRO
GAS TURB GEN - RC (CF) 19484	
DIESEL GENERATOR (CF) 1988	
SPARK IGN ENG GEN (CF) !	11 ANT
FUEL CELL - PHOS ACID (CF) 1000	
STEAM TURB GEN - COAL (CF) 10000	
STEAM TURB GEN - OIL (CF) 1000	.z3000000E.o7 jossocitestistocos especial con contra c
STIRLING ENG GEN (CF) 1000	
MHD GENERATOR (CF)	4) 85
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF) 10000	
STEAM TURB GEN (NF)	A) 90
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	
WIND TURB GEN 10-11	
WIND TURB GEN 10-5!	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	
FLYWHEEL STORAGE!	
BATTERY STORAGE!	

REQUIREMENT: 10 MW 1 HR

GAS THOR GEN - SCIENTING									
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GAS TURB GEN - RC(CF) 100	***************************************	***************************************				0000			
DIESEL GENERATOR (CF) 100	***************************************		***************************************			V			
SPARK IGN ENG GEN (CF)									
FUEL CELL - PHOS ACTO (CF) 186	•			-	***************************************	9			
STEAM TURB GEN - COAL (CF) 1981	***************************************	700000000000000000000000000000000000000			8) 80 C) 8	5			
STEAM TURB GEN - OIL (CF) IRE		A) 77					****		
STIRLING ENG GEN (CF) 100	***************************************	***************************************			1	A) 77			
MHD GENERATOR (CF) 198		***************************************		A) 85					
MHD/STEAM GEN (CF)			A) 85						
THERMIONIC GEN (CF) : 00			***************************************	*************		•		***	
STEAM TURB GEN (NF)							A) 90		
ORGANIC VAP TURB GEN (NF)									
GAS TURB GEN (NF) 100	***************************************								
RADIOISOTOPE GEN (NF)!	A) 90								
STEAM TURB GEN (SOLAR)									
ORGANIC VAP TURB GEN (SOLAR)!									
GAS TURB GEN (SOLAR)!									
PHOTOVOLTAIC (SOLAR)									
WIND TURB BEN 10-11									
WIND TURB GEN 10-51									
WIND TURB GEN 20-11									
WIND TURB GEN 20-51									
FLYWHEFL STORAGE! GO	***************************************								

PARAMETER: 68 FUEL COST/YEAR

REGUIREMENT: 10 MM 1 HR

10 MW 1 Hr.

PARAMETER

7) Environmental Constraints

noneminormoderatemajor

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

			25	of de	at de					.00	, , ,
0 W 20 W 1 W 20 2 W 20 3 W 20 4 W 20 5 W 20	\$ Co	CHOL	die of the Co	ji.º			1	90	e to	10 3	La Contract
SYSTEM	Sec.	4re	So	*	40.	500	40	40	50	5	43
AS TURB GEN - SC (CF)	+				T	1	Т	_	1		_
AS TURB GEN - RC (CF)	+-	-	1			1	1	1	-	-	-
IESEL GENERATOR (CF)	+	-	0	0		0			-	-	-
PARK IGN ENG GEN(CF)	亡	-	1	1	1	1			1	-	-
FUEL CELL - PHOS ACID (CF)	1-	-	-	-	-	-		-	-	-	-
TEAM TURB GEN - COAL (CF)	1-	•	0	0		•				0	-
TEAM TURB GEN - OIL (CF)	1-	•	0	0		•				0	-
STIRLING ENG GEN(CF)]-	-	0	0					-	-	-
HD GENERATOR (CF)	-	-	0	0	•					-	-
HD/STEAM GEN(CF)			-		_			1			
HERMIONIC GEN(CF)	-	-	0	0			0		-	-	-
RGANIC VAP TURB GEN(NF)	1	L	_		L	L	1	_	_	_	_
AS TURB GEN(NF)	-	-	-	_	_	_	_		-	_	_
RADIOISOTOPE GEN(NF)	+	•	-	-	-	-	0	-	-	0	0
STEAM TURB GEN (SOLAR)	-	-	-	\vdash	-	-	10	-	-	-	-
DRGANIC VAP TURB (SOLAR)	-	•	+	F	-	-	0	-	-	0	-
GAS TURB GEN (SOLAR)	+	-	-	\vdash	-	-	1	-	+	+	•
HOTOVOLTAIC (SOLAR)	- 9	-	-	十	-	-	0	-	+	-	-
IND TURB GEN (ALL)	+	1 100	-	-	-	-	-	-	-	+	-
FLYWHEEL STORAGE	F		-	F	-	-	-	-		1	
BATTERY STORAGE	1	Ē	=	E	-	-	-				
	1=	-		-	22	1=	3/5	-			1-

10 MW 1 Hr.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

O - minor limitation

• - major limitation

- overriding limitation

	1 2	×	e' 5	2 6	2	30 2	e o	A A
SYSTEM	40	40	No.	E. Car	300	8	, 150 60.00	4
GAS TURB GEN - SC (CF)	-	_	0	•	-	_	-	-
GAS TURB GEN - RC (CF)	_	_	0	•	_	_	_	-
DIESEL GENERATOR (CF)		_		•	-	-	-	-
SPARK IGN ENG GEN(CF)								
FUEL CELL - PHOS ACID(CF)			_		-	-	-	-
STEAM TURB GEN - COAL(CF)			•		1/4		_	-
STEAM TURB GEN - OIL(CF)					_	_	-	-
STIRLING ENG GEN(CF)	-	-	0		-	-	-	-
MHD GENERATOR (CF)	0	0	0		-	-	-	-
MHD/STEAM GEN(CF)								
THERMIONIC GEN(CF)	0	0	0		-	_	-	-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)		-	0	0	-	_		-
GAS TURB GEN(NF)		-		0	_	-		-
RADIOISOTOPE GEN(NF)								
STEAM TURB GEN (SOLAR)				-		-	-	_
ORGANIC VAP TURB (SOLAR)						11		
GAS TURB GEN (SOLAR)	-	-	0	-		-	-	-
PHOTOVOLTAIC (SOLAR)	_	-		-		-	-	-
WIND TURB GEN 10-1	-	-	-	-	-		-	
WIND TURB GEN 10-5	-			-	-		-	
WIND TURB GEN 20-1	-	-	1	-	1_		-	
WIND TURB GEN 20-5	-		-	-	-			Ī
FLYWHEEL STORAGE		0			1	-		-
BATTERY STORAGE	-	1	-	1	-	-	1	-

REQUIREMENT 750 KW Cont.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

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FLYWHEEL STORAGE: A CONTRACT C STIRLING ENG GEN (CF) : GARGE GARGE GARGE GARGE GARGE GARGE A) 85 A) 77 8) 85 C) 90 FUEL CELL - PHOS ACID (CF): DESCRIPTION OF SECURE OF SECUR OF SECURE OF SECUR OF SECURE OF SECURE OF SECURE OF SECURE OF SECURE OF SECUR OF SECURE OF SECURE OF SECURE OF SECURE OF SECURE OF SECURE OF SECUR

STEAM TURB GEN (SOLAR) I AD 90

RADIOISOTOPE GEN (NF)

ORGANIC VAP TURB GEN (SOLAR)

GAS TURB GEN (SOLAR) ! PORTOCOCOCOCOCO

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GAS TURB GEN - SC (CF) I deceded deced

SPARK IGN ENG GEN (CF)

STEAM TURB GEN - COAL (CF) ! 00000000000000000000 STEAM TURB GEN - OIL (CF) IRREPRESENTATIONS REQUIREMENT: 10 MW 1 HR

PARAMETER: 10 SYSTEM EFFICIENCY

THERMIONIC GEN (CF) ! STEAM TURB GEN (NF)

MHD/STEAM GEN (CF)

ORGANIC VAP TURB GEN (NF)

10 MW 1 HR.

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Туре
GAS TURB GEN - SC (CF)	Т
GAS TURB GEN - RC (CF)	F
DIESEL GENERATOR (CF)	Т
SPARK IGN ENG GEN(CF)	<u> </u>
FUEL CELL - PHOS ACID(CF)	F
STEAM TURB GEN - COAL (CF)	F
STEAM TURB GEN - OIL (CF)	F
STIRLING ENG GEN(CF)	Ţ
MHD GENERATOR (CF)	F
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	F
STEAM TURB GEN(NF)	14 1
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	r
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	F 1 91 3
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	F T
PHOTOVOLTAIC (SOLAR)	1 1 F 2 4 4 9
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	r P
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	
BATTERY STORAGE	F

REQUIREMENT: 10 MW 1 HR

STIRLING ENG GEN (CF) A HHD GENERATOR (CF) I A HHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) I
STEAM TURB GEN (SOLAR) GONGANIC VAP TURB GEN (SOLAR) GAS C) 95 WIND TURB GEN 10-118 GAS GEN 20-118 GAS GEN 20-

10 MW 1 Hr.

PARAMETER

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

System	Critical Materials
GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	Not modular
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL (CF)	Not modular
STEAM TURB GEN - OIL(CF)	Not modular
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	Not modular
MHD/STEAM GEN(CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	
CAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	Not modular
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully modular
	Language and the second

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

San reflection of the following of the second of the secon

SYSTEM	Auf	Nito Nito	410	4170	500	40 to	₩ OE	40	10
GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	_	_
GAS TURB GEN - RC (CF)	0	•	0	_	•		•	_	-
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	-	
SPARK IGN ENG GEN(CF)							- 5		1
FUEL CELL - PHOS ACID (CF)	-	-	-		0	_		_	
STEAM TURB GEN - COAL (CF)		0	0	-	0		•	_	
STEAM TURB GEN - OIL (CF)	•	0	0	_	0		•	_	
STIRLING ENG GEN(CF)	0	0	0	-	0	0	•	-	
MHD GENERATOR (CF)	0	•	-	_	•		•		
MHD/STEAM GEN(CF)									3
THERMIONIC GEN(CF)	0		-	_		0	0	_	
STEAM TURB GEN(NF)									
ORGANIC VAP TURB GEN(NF)									
GAS TURB GEN(NF)	•	0	0	0	-			-	-
RADIOISOTOPE GEN(NF)			10						
STEAM TURB GEN (SOLAR)		0	0	_	0				-
ORGANIC VAP TURB (SOLAR)						- 5			
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	1-		1-
PHOTOVOLTAIC (SOLAR)	-	0	-	-	0	-	-		-
WIND TURB GEN 10-1	0	0	•	-	0	-	-	-	
WIND TURB GEN 10-5	0	0		-	0	-	-		
WIND TURB GEN 20-1	0	0	•	-	0	-	-	-	
WIND TURB GEN 20-5	0	0		-	0	-		-	
FLYWHEEL STORAGE	0	-		-	-	-		-	-
BATTERY STORAGE	-	0	-	-	0		1		Ī

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

GAS TURB GEN - SCICF) 1000	1-00-00-00-00-00-00-00-00-00-00-00-00-00	
GAS TURB GEN - ACICE)		000000000000000000000000000000000000000
DIESEL GENERATOR (CF)	DIESEL GENERATOR (CF):000000000000000000000000000000000000	
SPARK IGN ENG GEN (CF)	26	
FUEL CELL - PHOS ACTO (CF)	FUEL CELL - PHOS ACIO (CF) I SESSESSESSESSESSESSESSESSES	
STEAM TURB GEN - COAL (CF) 1848		
STEAM TURB GEN - OIL (CF) !##	.2500000E+06	A) 77
STIRLING ENG GEN (CF) 140	•1650000E+06	A) 77
MHD GENERATOR (CF.)	I A) 85	
MHD/STEAM GEN (CF)		A) 85
THERMIONIC GEN (CF) : ##8		
STEAM TURB GEN (NF)	A) .21000000E+06	A) 90
ORGANIC VAP TURB GEN (NF)		
GAS TURB GEN (NF) 1998		-
RADIOISOTOPE GEN (NF)	A) .11000000E-U6	A) 90
STEAM TURB GEN (SOLAR) 1908	142000000000000000000000000000000000000	
ORGANIC VAP TURB SEN (SOLAR)		26.14
GAS TURB GEN (SOLAR) 1998	. 39500000E+06	A) 80
PHOTOVOLTAIC (SOLAR)!##6	-5454444544446444644464446444644644644644	8)85 C)95
WIND TURB GEN 10-11:00	8) 82 III	
WIND TURB GEN 10-5	WIND TURB GEN 10-51845888888888888 1	
WIND TURB GEN 20-1	WIND TURB GEN 20-110-00-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-	
WIND TURB GEN 20-5	WIND TURB GEN 20-5:00000000000000000000000000000000000	
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REQUIREMENT: 10 MM 1 HR

PARAMETER: 15 MAINT AND OPER

8 x 10 x 10 .5 .4 .5 .9	A) 77 B) 85 C) 90 C)	A) 77 A) 77 A) 85 4) 85 11000000E+09		A) 90 11600000E+09		ALTERNATION OF THE PROPERTY OF	
. 1. 0.	00 (0			3	9 (Y		
20 (20) (20) (20) (20) (20) (20) (20) (2	GAS TURB GEN - SC(CF) 1888 GAS TURB GEN - RC(CF) 1888 DIESEL GENERATOR (CF) 1888 SPARK IGN ENG GEN (CF) 1	STEAM TURB GEN - CUAL (CF) 1888 STIRLING ENG GEN (CF) 1888 MHD GENERATOR (CF) 1888	THERMIONIC GEN (CF) : ### THERMIONIC GEN (CF) : #### STEAM TURB GEN (NF) : ORGANIC VAP TURB GEN (NF) :	STEAM TURB GEN (SOLAR):	GAS TURB GEN (SOLAR) INDEP	MIND TURB GEN 10-51 MIND TURB GEN 20-11 MIND TURB GEN 20-51	

PARAMETER: 16 OTHER ENERGY PROD

REGUIREMENT: 10 MW 1 HR

10 MW 1 Hr.

PARAMETER

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	None
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL (CF)	None
STEAM TURB GEN - OIL (CF)	None
STIRLING ENG GEN(CF)	None
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	None
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	A COLOR DE LA CALLACIA DEL CALLACIA DE LA CALLACIA DEL CALLACIA DE LA CALLACIA DE
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	Was a second
ORGANIC VAP TURB (SOLAR)	None
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	None
BATTERY STORAGE	Possibly lead for conventional batteries

SECTION VIII

750 KILOWATT, CONTINUOUS

REQUIREMENT

Power Level: 750 Kw

Operating Mode: Continuous

Frequency/Phase: 60 Hz/3Ø

Voltage Level: 4160 V

promo 27 Marie

REQUIREMENT: 750 KM CONTINUOUS

2.0 2.25						STEAM TURB GEN - COAL (CF) 100 CF					THERMIONIC GEN (CF):		10000000000000000000000000000000000000	VIII.	06(4		**************************************		8) 85 C) 95	B) 85			8) 65	
1.75					FUEL CELL - PHOS ACID (CF):			A 900000000	6074					DECEMBER 1 No. 1 N					.81400000E+07 C) .81400000E+07			*1372000E+07	39340000E+07	
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.25	SAS TURB GEN - SC(CT):		DIESEL GENERATOR (CF): ####################################	VERSEBBEBBEBBEBBEBBEBBBBBBBBBBBBBBBBBBBB	*************	*************	A) . C/640000E-0/	STIRLING ENG GEN (CT): 2555555555555555555555555555555555555			*************	à	***************		A) .48000000E+07		-			-	_	-		
7	C(CF)	C (CF)	(CF)	(CF)	(65)	(CF)	(6)	(65)	(65)	(6)	(3)	(NF)	(NF)	(NF)	(NF)	OLAR)	OLAR)	OLAR)	OLAR	-0		1 00	FLYWHEEL STORAGE!	BATTERY STORAGE!
	SIZ	1 2	RATOR	IG GEN	ACID !	COAL	- 016	16 GEN	PATOR	IM GEN	IC GEN	NB GEN	SH GEN	B GEN	E GEN	S) N36	3EN (S	SEN (S	NIC (S	SB GEN		20 00	EL ST	RY ST
	GAS TURB GE	GAS TURB GEN - RC(CF)	DIESEL GENE	SPARK IGN EN	FUEL CELL - PHOS	STEAM TURB GEN -	STEAM TURB GEN - OIL (CF)	STIRLING EN	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONI	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) 198	GAS TUR	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	DRGANIC VAP TURB GEN (SOLAR) IMP	GAS TURB GEN (SOLAR) IPP	PHOTOVOLTAIC (SOLAR) 146	WIND TURB GEN 10-11-09	TIND TURB GEN 10-51 B	STATE OF THE PROPERTY OF THE P	FLYWHE	BATTE

REQUIREMENT: 750 KW CONTINUOUS

••	5 1.0 1.25 1.5 1.75 2.0 2.25
GAS TURB GEN - SC (CF) I GEORGE GENERAL CONTROL CONTRO	
GAS TURB GEN - RCICF)!	A) 77 B) 85 C) 90
DIESEL GENERATOR (CF) 1000000000000000000000000000000000000	
FUEL CELL - PHOS ACID (CF) ! ** OFFICE OFFIC	
STEAM TURB GEN - COAL (CF) FOREGOODSCORPEGES	
STEAM TURB GEN - OIL (CF)!	
STIRLING ENG GEN (CF) FOCEOCOCOCOCOCO	
MHD GENERATOR (CF)!	
MHD/STEAM GEN (CF)!	
THERMIONIC GEN (CF) I GOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGG	THERMIONIC GEN (CF) I GOOGGESTOOFF CONTROLLED TO CONTROLLE
STEAM TURB GEN (NF)!	医医疗 医乳腺性溃疡 医乳腺性 医乳腺性 医乳腺性 医乳腺性 医乳腺性 医乳球性 医乳球性 医乳球性 医乳球性 医乳球性 医乳球性 医乳球性 医乳球
ORGANIC VAP TURB GEN (NF) : FORFORTHOUSENESSESSESSESSESSESSESSESSESSESSESSESSE	
GAS TURB GEN (NF) I BESSESSESSESSESSESSESSESSES	98 T
RADIOISOTOPE GEN (NF)!	
STEAM TURB GEN (SOLAR)!	
ORGANIC VAP TURB GEN (SOLAR)! DEGGELOGEOGEOGEOGEOGEOGEOGEOGEOGEOGEOGEOGEOGEO	¥ 7000000000000000000000000000000000000
GAS TURB GEN (SOLAR): 10001010101010101010101010101010101010	V0000000000000000000000000000000000000
PHOTOVOLTAIC (SOLAR) I PRESENCE DESCRIPTION OF DESC	
MIND TURB GEN 10-11 00000000000000000000000000000000	6) 65 (195)
WIND TURB GEN 10-5: OFFICE CONCESSOR CONTRACTOR	
WIND TURB GEN 20-11-00-000000000000000000000000000000	
WIND TURB GEN 20-5: PERSONNELLE BISS	
FLYWHEEL STORAGE!	
BATTERY STORAGE!	

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REQUIREMENT: 750 KW CONTINUOUS

.3 .4 .5 .6 .7 .8 .9		A) .10120000E+07	A) .10680000E+07 A) 80	
.0 .1 .2 .3	GAS TURB GEN - SC(CF) A177 B185 C190 GAS TURB GEN - RC(CF) DIESEL GENERATOR (CF) A177 SPARK IGN ENG GEN (CF) CF CF CF CF A177 B185 C190 A177 FUEL CELL - PHOS ACID (CF) CF CF CF A177 B180 C185 STEAM TURB GEN - COAL (CF) STIRLING ENG GEN (CF) MHD GENERATOR (CF) THEDRIONY GEN (CF) THEDRIONY GEN (CF)			PHOTOVOLTAIC (SOLAR) 1894845888888888888888888888888888888888

.5 1.0 1.5 2.5 3.0 3.5 4.0 4.5	000000000000		DIESEL GENERATOR (CF): 1944-1944-1944-1944-1944-1944-1944-1944	V 000000000000000000000000000000000000		V0000000000000000000000000000000000000		STIRLING ENG GEN (CT) ISSESSESSESSESSESSESSESSESSESSESSESSESSE			V0000000000000000000000000000000000000	0.617	ORGANIC VAP TURB GEN (NF):000000000000000000000000000000000000	¥100000			ORGANIC VAP TURB GEN (SOLAR) INDEPENDENT OF THE PROPERTY OF TH	GAS TURB GEN (SOLAR) : 00000000000000000000000000000000000		MINO TURB GEN 10-1:0000000000000000000000000000000000	WIND TURB GEN 10-510000000000000000000000000000000000			《《···································	
0	(F) 1 8000		(F)	SPARK IGN ENG GEN (CF) 10000	(F) (000	CF) [000	- E	(A)	- <u>C</u>	- <u>C</u>	THERMIONIC GEN (CF) 1888	- <u>-</u>	(F)	GAS TURB GEN (NF) 10000	(F)	1831	(R) 10000	(A)	PHOTOVOLTAIC (SOLAR) 18669	-11	-5100	-1-	WIND TURB GEN 20-510000	1961	1961
	. Sc (GAS TURB GEN - RC (CF)	TOR (SEN (010	346 ((אר נו	EN CC	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	SEN CC	STEAM TURB GEN (NF)	SEN CA	SEN CH	RADIOISOTOPE GEN (NF)	SOLA	SOLA	SOLA	(SOL)	EN 10	1 N3	EN 20	3EN 20	FLYWHEEL STORAGE	BATTERY STORAGE!
	GEN	GEN .	NERA	ENG	OS A	- 0	1 2	ENG	NERA	EAM	NIC	URB	URB	URB 6	3do	GEN	GEN	GEN	TAIC	URB 6	URB 6	URB	URB 6	HEEL	TERY
	TURB	TURB	EL 6E	IGN	4	9 GEN	4B GE	ING	40 GE	HD/ST	ERMIO	EAM T	VAP T	SAS T	DISOT	TURB	TURB	TURB	TOVOL	INO T	T ONI	IND T	T ONI	FLYN	BAT
	GAS	GAS	OTES	SPARK	FUEL CELL - PHOS ACID (CF) 1980	STEAM TURB GEN - COAL (CF) 18484	STEAM TURB GEN - OIL (CF)	STIR	•	ī	Ξ	IS	ORGANIC		RADI	STEAM TURB GEN (SOLAR)!	ORGANIC VAP	GAS	OHA			TOTAL CARE	•		

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	.0 .25 .5 .75 1.0 1.25 1.5 1.75 2.0 2.25
GAS TURB GEN - SCICFILEGE	**********************
GAS TURB GEN - RC(CF)	CF) 1
DIESEL GENERATOR (CF) 1000	
SPARK IGN ENG GEN (CF) 100	V1000000000000000000000000000000000000
FUEL CELL - PHOS ACID (CF)	•
STEAM TURB GEN - COAL (CF)	の関連を受ける。 の関連を受ける。 の対象を対象を対象を対象を対象を対象を対象を対象を対象を対象を対象を対象を対象を対
STEAM TURB GEN - OIL (CF)	のでは、「大きなないできない。」 「「大きなないないできないないないないないないないないないないないないないないないない
STIRLING ENG GEN (CF) 1886	
MHD GENERATOR (CF)	
MHD/STEAM GEN (CF)	のでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、「大きないでは、
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF) 1946	
GAS TURB GEN (NF) 198	V-000000000000000000000000000000000000
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	は、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、「日本のでは、
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	
FLYWHEEL STORAGE!	

REQUIREMENT: 750 KW CONTINUOUS

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GAS TURB GEN - SCICF)										
GAS TURB GEN - RCICF)	Ē.									
DIESEL GENERATOR (CF)	Ē.									
SPARK IGN ENG GEN (CF)										
FUEL CELL - PHOS ACID (CF) IG	9	30.0000								
STEAM TURB GEN - COAL (CF) 18000		A177 81 60 61 83								
STEAM TURB GEN - OIL (CF)										
STIRLING ENG GEN (CF)	- E									
MHD GENERATOR (CF)	<u>.</u>									
MHD/STEAM GEN (CF)										
THERMIONIC GEN (CF)	<u>.</u>									
STEAM TURB GEN (NF)										
ORGANIC VAP TURB GEN (NF)	- <u>-</u> -									
GAS TURB GEN (NF)	=									
RADIOISOTOPE GEN (NF)										
STEAM TURB GEN (SOLAR)	- 2									
ORGANIC VAP TURB GEN (SOLAR) 100001	8	V	***************************************			***************************************				
GAS TURB GEN (SOLAR) I DESTRUCCION CONTROCTION CONTROLL CONTROL C	8		************							
PHOTOVOLTAIC (SOLAR) I BREE	8	************			A) 80		***********			
1 8) .3500000E+0: WIND TURB GEN 10-1:0000000000	6	35000000E+05 C) .3500000E+05 CE .3500000E+05	05 C) .350 B	00000E+05						8) 85 C) 95
WIND TURB GEN 10-5:0000	-516	6) 85	•		The Manual Control					
WIND TURB GEN 20-1100000000		:	800000000000							
MIND TURB GEN 20-510000	-5:		8) 85							
FLYWHEEL STORAGE!	- 19	8) 82								
BATTERY STORAGE!	96.1									And the second second second
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FLYWHEEL STORAGE!

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GAS TURB GEN - SC(CT): BEBERGE	(CF)	10000000000			· · · · · · · · · · · · · · · · · · ·	
GAS TURB GEN - RCICF)	CEDI					
DIESEL GENERATOR (CF) : 00000000000000000000000000000000000	(CF)	***************************************	1			
SPARK IGN ENG GEN (CF) : BERROCOCOCOCOCOCOCOCO	(CF)		V			
FUEL CELL - PHOS ACID (CF) 1000000000000000000000000000000000000	(CF)	***************************************	***************************************		900000000000000000000000000000000000000	
STEAM TURB GEN - COAL (CF)	(CF)				A) 77 8) 80 C) 85	
STEAM TURB GEN - OIL (CF)	CE	TO SECTION OF SECTION				
STIRLING ENG GEN (CF) 1000000000000	(3)	V				
MHD GENERATOR (CF)		Al 65 september 2 miles			***************************************	(
MHD/STEAM GEN (CF)	5					
THERMIONIC GEN (CF)	CE		•			
STEAM TURB GEN (NF)	(NE)					
ORGANIC VAP TURB GEN (NF) : DECENDED DE	(NF)	***************************************	***************************************		V	
GAS TURB GEN	(NF)	GAS TURB GEN (NF) INTERPRESENTATION OF THE CONTROL			v	
RADIOISOTOPE GEN (NF)	(NF)			A) 90	•	
STEAM TURB GEN (SOLAR)	LARIE					
ORGANIC VAP TURB GEN (SOLAR)	LAR					
GAS TURB GEN (SOLAR)	LAR					
PHOTOVOLTAIC (SOLAR)	LAR					
WIND TURB GEN 10-11	10-1	7813 Q 618 TE				
WIND TURB GEN 10-51	10-51					
WIND TURB GEN 20-11	20-11					
WIND TURB GEN 20-51	20-51					
	10 M 20 M 20					

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3.5 4.0

REQUIREMENT: 750 KW CONTINUOUS

	KG PER YEAR X 10 1.2555 1.0 1.25 1.5 1.75 2.0 2.25
GAS TURB GEN - SCICF) 10	
GAS TURB GEN - RC(CF)	A) / 6) 65 C140
DIESEL GENERATOR (CF)	
SPARK IGN ENG GEN (CF) I	
FUEL CELL - PHOS ACTO (CF) !!	***************************************
STEAM TURB GEN - COAL (CF) !!	
STEAM TURB GEN - OIL (CF)!	A) .79000000E.07
STIRLING ENG GEN (CF) 14	***************************************
MHD GENERATOR (CF)	A) 85
MHD/STEAM GEN (CF)!	
THERMIONIC GEN (CF) !!	
STEAM TURB GEN (NF)!	7).00
ORGANIC VAP TURB GEN (NF)!	
GAS TURB GEN (NF)!	
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)!	· 一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
ORGANIC VAP TURB GEN (SOLAR)!	
GAS TURB GEN (SOLAR)!	
PHOTOVOLTAIC (SOLAR)!	
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	· 果果你可靠着我们是我们的一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
WIND TURB GEN 20-11	
WIND TURB GEN 20-5!	
FLYWHEEL STORAGE!	
BATTERY STORAGE!	

REGUIREMENT: 750 KW CONTINUOUS

	.0 .5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5
GAS TURB GEN - SCICF)	GAS TURB GEN - SCICF) INCOMPONDENCE CONTROL OF CONTROL
GAS TURB GEN - RC(CF)	A)77 8185 C190
DIESEL GENERATOR (CF)	DIESEL GENERATOR (CF): OPERBOONDESCONDESCONDESCONDA A) 77
SPARK IGN ENG GEN (CF)	STATE IGN ENG GEN (CT) - SERESESESESESESESESESESESESESESESESESES
FUEL CELL - PHOS ACID (CF)	FUEL CELL - PHOS ACID (CF): 1410-1410-1410-1410-1410-1410-1410-1410
STEAM TURB GEN - COAL (CF) : 898988888888888	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF)	STIRLING ENG GEN (CF) IDOCCOCCOCCOCCOCCOCCOCCOCC
MHD GENERATOR (CF)	A 85.
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	THERMIONIC GEN (CF) I CORP. CO
STEAM TURB GEN (NF)	A190
ORGANIC VAP TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) 10090000000000000000000000000000000000
GAS TURB GEN (NF)	GAS TURB GEN (NF) I CONCENTION CONTINUED TO CONTINUE CONTINUED CON
RADIOISOTOPE GEN (NF)	06 (Y
STEAM TURB GEN (SOLAR)	. 化脱氧氯磺胺磺胺 医克里特氏 医克里特氏 医克里特氏 医甲基氏试验检尿道 医多氏性神经坏疽 医甲基氏性神经炎 医克里氏 医克里氏病 医克里氏病 医克里氏病 医克里氏病 医二甲基甲基氏病 医克里氏病 医克里氏病 医克里氏病 医克里氏病 医克里氏病 医克里氏病 医克里氏病 医二甲基氏病 医二甲基氏原生原生原生原生原生原生原生原生原生原生原生原生原生原生原生原生原生原生原生
ORGANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	我們接受最後接受者 医神经管 医生物性 医神经管 医生物性 医神经管 医生物性 医神经管 医生物性 医神经性 医神经性 医神经性 医神经性 医神经性 医神经性 医神经性 医神经
WIND TURB GEN 10-1	10 - 1240 - 1740 - 184
WIND TURB GEN 10-5!	如果,我们也可以是一个,我们就是不是一个,我们也不是一个,我们也不是一个,我们也不是一个,我们也不是一个,我们也不是一个,我们也不是一个,我们也不是一个,我们就是 第二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十
WIND TURB GEN 20-11	· · · · · · · · · · · · · · · · · · ·
WIND TURB GEN 20-51	
FLYWHEEL STORAGE	· 医克里里氏 化氯化甲基苯基苯基苯甲甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲
BATTERY STORAGE	位甲には、中国の日間、日本とは、 日本とは、日本とは、日本とは、日本とは、日本とは、日本とは、日本とは、日本とは、

750 KW Cont.

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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	-SO	not a	ist.	Siger	10 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			.0	, co	Se de de	Tr. Och
SYSTEM	E.C.	EL.	0	*	\$0.	+ 60	+ 40	, do	ري دي	· 25	e d
GAS TURB GEN - SC (CF)	1-	T-	0	10					Ι_	T_	1_
GAS TURB GEN - RC (CF)				Ť							T
DIESEL GENERATOR (CF)	1-	1_	0	0		0					
SPARK IGN ENG GEN(CF)	1	1	1	1	1	1	1	-		Ē	1
FUEL CELL - PHOS ACID (CF)	1-	-	-	-	-	-	0				-
STEAM TURB GEN - COAL(CF)	1	•	0	0		•	0	•	•	0	-
STEAM TURB GEN - OIL (CF)	+-	1	-	1	1		-	-	-	1	Ť
STIRLING ENG GEN(CF)	1		0	0							1
MHD GENERATOR (CF)	+	广	1	10	1	1	0	-	1	1	广
MHD/STEAM GEN(CF)	+-	1			1				1		+
THERMIONIC GEN(CF)	+		1	1	1	-	-	1	-		
STEAM TURB GEN(NF)	+	十	0	0	+	0	0		+	1	-
ORGANIC VAP TURB GEN(NF)	+	1	-	+	†-	+	+-			-	+
GAS TURB GEN(NF)	+	1-	-	+	-	+	0	-	-	0	0
RADIOISOTOPE GEN(NF)	+	-	1	-	+	十	0	-	-	0	0
STEAM TURB GEN (SOLAR)	+	+	+	-	+	-	\vdash	-	+	+	+
ORGANIC VAP TURB (SOLAR)	+	-	-	+	-	-	+-	+	+-	-	+
GAS TURB GEN (SOLAR)	+	1	1-	+	-	1-	0	-	-	0	+
PHOTOVOLTAIC (SOLAR)	+	1-	-	+	1-	-	0	-	+	1	-
WIND TURB GEN (ALL)	+	-	+	+	-	-	1	-	-	-	-
FLYWHEEL STORAGE	+	1-	-	+	-	=	-	-	-	-	+
BATTERY STORAGE	+	-	+	+	-	-	-	-	-	+-	+
BATTERT STORAGE			_	L	143						

- - none

0 - minor

0 - moderate

• - major

750 KW Cont.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation

0 - minor limitation - major limitation

- overriding limitation

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SYSTEM	40 X	70	100	'C' S	S	A. 50	60° C	4
GAS TURB GEN - SC (CF)	-	_	0	•	-	_	_	-
GAS TURB GEN - RC (CF)	100			I.				
DIESEL GENERATOR (CF)	-	-	-		_			_
SPARK IGN ENG GEN(CF)	-	-	-		1-	-		-
FUEL CELL - PHOS ACID (CF)	-	-	-		-	-		-
STEAM TURB GEN - COAL(CF)	•				-	_	_	-
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN(CF)	-		0		-	-		-
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)								
THERMIONIC GEN(CF)	0	0	0		_	-	-	-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)		-	0	0	-	-		_
GAS TURB GEN(NF)		-		0	-	-		-
RADIOISOTOPE GEN(NF)								
STEAM TURB GEN (SOLAR)					787			
ORGANIC VAP TURB (SOLAR)		-	0	-		-	-	-
GAS TURB GEN (SOLAR)	_	-	0	-		-	-	-
PHOTOVOLTAIC (SOLAR)	_	-	-	-	•	-	-	-
WIND TURB GEN 10-1	-	-	-	-	_0		-	-
WIND TURB GEN 10-5	-	-	-	-	-		-	-
WIND TURB GEN 20-1	_	-	-	-	-		-	-
WIND TURB GEN 20-5	_	-	-	-	-		-	1
FLYWHEEL STORAGE								T
BATTERY STORAGE				1			1	1

750 KW Cont.

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

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SYSTEM	est.	Pat	Des	Der	OJe	Del	2,0
GAS TURB GEN - SC (CF)	•	0	-	-	0	0	0
GAS TURB GEN - RC (CF)							
DIESEL GENERATOR (CF)	0	0	-	-	0	0	0
SPARK IGN ENG GEN(CF)	•	0	-	-	0	0	0
FUEL CELL - PHOS ACID (CF)	-	-	-	-	-	-	-
STEAM TURB GEN - COAL(CF)	0	0		-	0	0	
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN(CF)	0	0	_	-	0	0	0
MHD GENERATOR (CF)							
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-		0	0
STEAM TURB GEN(NF)							
ORGANIC VAP TURB GEN(NF)	0	0	-	-	0	0	0
GAS TURB GEN(NF)	0	0	-	-	0	0	0
RADIOISOTOPE GEN(NF)							
STEAM TURB GEN (SOLAR)							
ORGANIC VAP TURB (SOLAR)	-	0		-	0	0	-
GAS TURB GEN (SOLAR)	_	_		-	0	-	-
PHOTOVOLTAIC (SOLAR)	-	-	•	-	-	-	-
WIND TURB GEN 10-1	-	-	-	•	-	-	-
WIND TURB GEN 10-5	1	-	-	•	-	-	-
WIND TURB GEN 20-1	-	750	-	•	-	-	-
WIND TURB GEN 20-5		-	-		-	3	1/2
FLYWHEEL STORAGE				T			1
BATTERY STORAGE				1			T

REQUIREMENT: 750 KW CONTINUOUS

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0.				***************************************		6							***************************************	7.6					100000000000000000000000000000000000000					
	GAS TURB GEN - SC(CF)	CONTRACTOR SERVICE	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACTO (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF)	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) 1000	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) I DEDPONDEDED	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-1	WIND TURB GEN 10-51 00000	WIND TURB GEN 20-11000	WIND TURB GEN 20-5	FLYWHEEL STORAGE	BATTERY STORAGE

750 KW Cont

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	M
GAS TURB GEN - RC (CF)	_
DIESEL GENERATOR (CF)	M
SPARK IGN ENG GEN(CF)	T
FUEL CELL - PHOS ACID(CF)	F
STEAM TURB GEN - COAL (CF)	F
STEAM TURB GEN - OIL(CF)	-
STIRLING ENG GEN(CF)	м
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	_
ORGANIC VAP TURB GEN(NF)	F
GAS TURB GEN(NF)	F
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	2 2 7 5 4 5
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	
BATTERY STORAGE	

ALCO STORES

BATTERY STORAGE!

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2																								
2.0																								
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0	3	₹	9 4	_	i		. ×	8 8				•	i				i	E .	18 85	18 85	18 85	18) 85	6	-
	GAS TURB GEN - SC (CF) 16	DIESEL GENERATOR (CF) IA	SPARK IGN ENG GEN (CF) IA	(CF)	(CF)	(CF)	STIRLING ENG GEN (CF) IA	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	(NF)	GAS TURB GEN (NF) 1000	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	LAR!	GAS TURB GEN (SOLAR) 1000	PHOTOVOLTAIC (SOLAR) IE	WIND TURB GEN 10-118	WIND TURB GEN 10-518	WIND TURB GEN 20-118	WIND TURB GEN 20-518	FLYWHEEL STORAGE	
		ATOR	GEN	ACID	COAL	. 016	GEN	ATOR	GEN	GEN	GEN	GEN	GEN	GEN	N (S	N (S)	N (S))S))	GEN	GEN	GEN	GEN	L ST	
	B GEN	GENER	N EN	PHOS	EN -	GEN	G ENG	GENER	STEAM	TONI	TURE	TURE	TURE	0100	RB GE	RB GE	RB GE	OLTAI	TURE	TURE	TURE	TURE	YWHE	
	S TUR	ESEL	RK 16	. 1	URB G	TURB	IRLIN	H	MHO	THERM	STEAM	C VAP	GAS	21010	AM TU	AP TU	AS TU	HOTOM	WING.	WING.	WING	WING	4	
	8	6	SPA	FUEL CELL - PHOS ACID (CF) 1998	STEAM TURB GEN - COAL (CF) 1888	STEAM TURB GEN - OIL (CF)	ST					ORGANIC VAP TURB GEN (NF) : 846		4	STE	ORGANIC VAP TURB GEN (SOLAR) I	0	٥						
				5	ST	S						6				ORGA						Z.E.		

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PARAMETER

750 KW Cont.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

System	Critical Materials
GAS TURB GEN - SC(CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID (CF)	Fully modular
STEAM TURB GEN - COAL(CF)	Not modular
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	Not modular
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN(NF)	The state of the s
STEAM TURB GEN (SOLAR)	alo la la la la la cesa escre
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	
BATTERY STORAGE	

750 KW Cont.

PARAMETER

14) Reliability/Availability

The tabulated conditions power system to the external conditions.										
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		ton	" Les	8	40	.05	"NOT	MOD	4	4
SYSTEM	\$10th	41.0	cat well	41.0	S. Co.	" The	* POL	and the state of the state of	at the state of th	
GAS TURB GEN - SC (CF)	0	•	0	-		0	•	-	-	
GAS TURB GEN - RC (CF)										
DIESEL GENERATOR (CF)	•	0	0	1	0	0	•	-	-	
SPARK IGN ENG GEN(CF)		0	0	-	0	0	•	_	-	
FUEL CELL - PHOS ACID(CF)	-	-	1	-	0	-	-	-	-	
STEAM TURB GEN - COAL(CF)	•	0	0	-	0		•	-	-	
STEAM TURB GEN - OIL (CF)										
STIRLING ENG GEN(CF)	0	0	0		0	0	•	_	_	
MHD GENERATOR (CF)										
MHD/STEAM GEN(CF)						U DI				
THERMIONIC GEN(CF)	0	•	-	-		0	0	-	-	
STEAM TURB GEN(NF)										
ORGANIC VAP TURB GEN(NF)	0	0	0	0	-	0	•	-	-	
GAS TURB GEN(NF)		0	0	0	_			-	-	
RADIOISOTOPE GEN(NF)								N P		
STEAM TURB GEN (SOLAR)				120						
ORGANIC VAP TURB (SOLAR)	0	0	0	-	-	0	-	•	-	
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	-	•	_	
PHOTOVOLTAIC (SOLAR)	-	0		-	0	-	-		-	
WIND TURB GEN 10-1	0	0	•	-	0	-	-	-	•	
WIND TURB GEN 10-5	0	0		-	0	-	-	-	•	
WIND TURB GEN 20-1	0	0	•	-	0	-	-	-	•	
WIND TURB GEN 20-5	0	0		-	0	-	-	_	•	
FLYWHEEL STORAGE										

BATTERY STORAGE

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

REQUIREMENT: 750 KW CONTINUOUS

645 TURB GEN - SC(CF) 1966 645 TURB GEN - RC(CF) 1967 10 IESEL GENERATOR (CF) 1964 11 CELL - PHOS ACID (CF) 1967 12 CELL - PHOS ACID (CF) 1967 13 TIRLING ENG GEN (CF) 1967 14 TURB GEN - OIL (CF) 1967 15 TIRLING GEN GEN (CF) 1967 16 STIRLING GEN GEN (CF) 1967 17 HHD/STEAM GEN (CF) 1967 18 ADIOISOTOPE GEN (NF) 1969 18 ADIOINE CHARACE (SOLAR) 1969 18 ADIOINE CH	1.0 1.5 2.0 2.5 3.0 3.5
GAS TURB GEN - RC(CF) 1 SPARK IGN ENG GEN (CF) 1004 SPARK IGN ENG GEN (CF) 1004 L CELL - PHOS ACID (CF) 100 AN TURB GEN - COAL (CF) 10000004 AND GENERATOR (CF) 1 AND TURB GEN (NF) 100000004 STEAM TURB GEN (NF) 100000000 GAS TURB GEN (NF) 1000000000 GAS TURB GEN (NF) 1000000000000000000000000000000000000	•••••••••••••••••••••••••••••••••••••
DIESEL GENERATOR (CF) 100A SPARK 1GN ENG GEN (CF) 100A L CELL - PHOS ACID (CF) 100 AN TURB GEN - COAL (CF) 1000000A EAM TURB GEN - OIL (CF) 1 STIRLING ENG GEN (CF) 1 HHD GENERATOR (CF) 1 STEAM TURB GEN (NF) 1 STEAM TURB GEN (NF) 1 STEAM TURB GEN (NF) 1 STEAM TURB GEN (SOLAR) 1 C VAP TURB GEN (SOLAR) 1 STEAM TURB GEN (SOLAR) 1 STEAM TURB GEN (SOLAR) 1 MIND TURB GEN 10-1 100000000000000000000000000000000	
SPARK IGN ENG GEN (CF) 1001A FUEL CELL - PHOS ACID (CF) 1001A STEAM TURB GEN - COAL (CF) 1001A STEAM TURB GEN - COAL (CF) 1001A STEAM TURB GEN (CF) 1 THERHIONIC GEN (CF) 1 THERHIONIC GEN (CF) 1 THERHIONIC GEN (CF) 1 A) 90 GAS TURB GEN (NF) 1001A STEAM TURB GEN (NF) 1001A STEAM TURB GEN (SOLAR) 1001A STEAM TURB GEN (SOLAR) 1001A BADIOISOTOPE GEN (NF) 1001A STEAM TURB GEN (SOLAR) 1001A WIND TURB GEN (SOLAR) 1001A WIND TURB GEN 10-5 1001A WIND TURB GEN 20-1 1001A B) 95 FLYWHEEL STORAGE 1 FLYWHEEL STORAGE 1	
L CELL - PHOS ACID (CF) 106 AN TURB GEN - COAL (CF) 10600000000000000000000000000000000000	
AM TURB GEN - COAL (CF) IA 177 BI BO C) BS EAM TURB GEN - OIL (CF) IA 177 STIRLING ENG GEN (CF) IA 185 MHO GENERATOR (CF) IA 185 MHO GENERATOR (CF) IA 185 MHO GENERATOR (CF) IA 180 STEAM TURB GEN (NF) IA 190 GAS TURB GEN (NF) IA 190 GAS TURB GEN (NF) IA 190 GAS TURB GEN (SOLAR) IA 190 GAS TURB GEN (SOLAR) IA 190 WIND TURB GEN IO-11 GENERATOR GENERATOR GENERATOR GENERATOR GEN IA 190 WIND TURB GEN IO-11 GENERATOR GENERATOR GENERATOR GENERATOR GEN IA 190 WIND TURB GEN IO-51 GENERATOR GENERAT	
STIRLING ENG GEN (CF) A 365 HHD GENERATOR (CF) A 365 HHD/STEAM GEN (CF) A 365 HHD/STEAM GEN (CF) A 365 HHD/STEAM GEN (CF) A 360 GAS TURB GEN (NF) 1000000000000000000000000000000000000	
MHD/STEAM GEN (CF) I A)85 MHD/STEAM GEN (CF) I GOOD GEN GEN I G	
MHD GENERATOR (CF) I MHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I STEAM TURB GEN (NF) I STEAM TURB GEN (NF) I STEAM TURB GEN (SOLAR) I PHOTOVOLTAIC (SOLAR) I MIND TURB GEN IO-1 I STEAM TURB GEN (SOLAR) I STEAM TURB GEN SOLAR) I STEAM TURB GEN SOLAR	
HHD/STEAM GEN (CF) ITHERMOSTEAM GEN (CF) ITHERMOSTEAM GEN (CF) ITHERMOSTEAM TURB GEN (NF) ITHERMOSTEAM TURB GEN (NF) ITHERMOSTEAM TURB GEN (SOLAR) ITHERMOSTEAM TURB GEN (SOLAR) ITHERMOSTEAM TURB GEN (SOLAR) ITHERMOSTEAM TURB GEN (SOLAR) ITHERMOSTEAM TURB GEN 10-1 ITHERMOSTEAM TURB GEN 10-1 ITHERMOSTEAM TURB GEN 10-1 ITHERMOSTEAM TURB GEN 10-5 ITHERMOSTEAM TURB GEN 20-1 ITHERMOSTEAM TURB GEN 20-1 ITHERMOSTEAM TURB GEN 20-1 ITHERMOSTEAM TURB GEN 20-1 ITHERMOSTEAM TURB GEN 20-5	
THERMIONIC GEN (CF) INTERPRETATION (CF) INTERP	
STEAM TURB GEN (NF) I GOLDBOOK AND BOOK AND TURB GEN (NF) I GOLDBOOK AND BOOK AND BOOK AND BOOK AND TURB GEN (SOLAR) I GOLDBOOK AND TURB GEN (SOLAR) I GOLDBOOK AND TURB GEN 10-11 GOLDBOOK AND TURB GEN 10-11 GOLDBOOK AND TURB GEN 20-11 GOLDBOOK AND TURB G	V
GANIC VAP TURB GEN (NF) 1000000000000000000000000000000000000	本部 A190 よるななななない。
GAS TURB GEN (NF) 1 A) 90 STEAM TURB GEN (SOLAR) 1 MIND TURB GEN 10-11 10000000000000000000000000000000	
STEAM TURB GEN (SOLAR): STEAM TURB GEN (SOLAR): C VAP TURB GEN (SOLAR): PHOTOVOLTAIC (SOLAR): WIND TURB GEN 10-1: WIND TURB GEN 10-5: WIND TURB GEN 20-1: B) 85 WIND TURB GEN 20-5: FLYWHEEL STORAGE: B) 85	
STEAM TURB GEN (SOLAR): GAS TURB GEN (SOLAR): PHOTOVOLTAIC (SOLAR): WIND TURB GEN 10-1: WIND TURB GEN 20-1: WIND TURB GEN 20-1: WIND TURB GEN 20-1: B) 85 WIND TURB GEN 20-5: FLYWHEEL STORAGE: B) 85	
GAS TURB GEN (SOLAR) IOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC	
MIND TURB GEN (SOLAR) INTERPRETATION OF THE BOOK OF TH	Y0000000000000000000000000000000000000
WIND TURB GEN 10-11000000000000000000000000000000000	i
	(SOLAR) I continuous properties to the second secon
	8) 85 (2) 95
	69.05
	900000000000000000000000000000000000000
STORAGE	50.00
	\$6.0
BATTERY STORAGE!	

REGULREMENT: 750 KW CONTINUOUS

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GAS TURB GEN - SCICE)	SC(CF) PROPERTY OF PROPERTY OF THE PROPERTY OF THE PROPERTY BIRS () 90
GAS TURB GEN - RC(CF)	Distriction
DIESEL GENERATOR (CF)	DIESEL GENERATOR (CF): BORGOGGGGGGGGGGGGGGGGGGGGAAAAAAAAAAAAAAA
SPARK IGN ENG GEN (CF)	SPARK IGN ENG GEN (CT) CAN CONTROL CON
FUEL CELL - PHOS ACID (CF) ###################################	
STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - COAL (CF) 1900-00-00-00-00-00-00-00-00-00-00-00-00-
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF) 1000000000000000000000000000000000000	
MHD GENERATOR (CF)	, 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	THERMIONIC GEN (CF) : ***********************************
STEAM TURB GEN (NF)	A) %
ORGANIC VAP TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) I PRESENTATION OF THE PROPERTY OF TH
GAS TURB GEN (NF)	GAS TURB GEN (NF) ICTECOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOC
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) I FREEDOFFEE FOR
GAS TURB GEN (SOLAR)	SOLAR) I PERSONNES
PHOTOVOLTAIC (SOLAR)	A) 80
WIND TURB GEN 10-11	Military Wilse
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	
BATTERY STORAGE	

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PARAMETER

750 KW Cont.

17) Availability of Raw Build-

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	No.
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID (CF)	Platinum
STEAM TURB GEN - COAL (CF)	None
STEAM TURB GEN - OIL (CF)	ation taxtionally set
STIRLING ENG GEN(CF)	None
MHD GENERATOR (CF)	ROTE
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	None
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	
BATTERY STORAGE	

SECTION IX

250 KILOWATT, CONTINUOUS

REQUIREMENT

Power Level: 250 Kw

Operating Mode: Continuous

Frequency/Phase: 60 Hz/30

Voltage Level: 480 V

REQUIREMENT: 250 KW CONTINUOUS

	0.10	ď	1:0	1.5	1977 DOLLARS 2.0 2.5	LLARS 2.5	3.0 × 10	3.5	•	•
GAS TURB GEN - R	RC(CF)	A) 77 8) 85 C) 90								
DIESEL GENERATOR (CF) IA SPARK IGN ENG GEN (CF) IA	TOR (CF) IA	27.0								
FUEL CELL - PMOS ACIO (CF) 16	(CF) 16	A) 77 6 A) 77 8) 80 C) 85								
STEAM TURB GEN - OIL (CF)	6	The section of the se								
STIRLING ENG GEN (CF) 1A MHD GENERATOR (CF) 1	and been distributed	1 A) 85								
MHD/STEAM GEN (CF)	1 (CF) 1									
THERMIONIC GEN	(CF)	SEN (CF) Interestration of the contraction of the c	***************************************				***********			i
STEAM TURB GEN	SEN (NF)	A) . 03CUUUUUE								à
	(NF) 1	ATOMORPH AND THE CONTRACT OF T	***********		A) 80	¥				
BANTOTSOTOPE GEN	SEN (NF) I	SCR (NF) Independent of the second se			06 (V	V				
	OLAR)									
ORGANIC VAP TURB GEN (SI	SOLAR) IS	(SOLAR) ! ###################################	***************************************			A.00.				
GAS TURB GEN (SC	OLAR) IS	(SOLAR)		4	A) 80					
PHOTOVOLTAIC (SC	OLAR) I	(SOLAR) : 448444444444444444444444444444444444	91 Y			8				
WIND TURB GEN 10-1:0000000000000000000000000000000000	10-11		3		8)85 ()95	56 (2				
MIND TURB GEN 10-5190900000000000000000000000000000000	10-51			80000						
WIND TURB GEN 20-11886888888	20-110	1 0000000B	69 69							
MIND TURB GEN 20-5100000000000000000000000000000000000	EN 20-519 STORAGE!	8	8) 85							
BATTERY ST	STORAGE									

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	PARAMETER: 24 LIFE
	REGUIREMENT: 250 KW CONTINUOUS
BATTERY STORAGE!	

	. 2. 1. 0.	۶.	6.	1977 DOLLARS	• × 10		•	0,	
GAS TURB GEN - SC(CF) 1000000000000000000000000000000000000		A) 7	A) 77 B) 85 C) 90						
DIESEL GENERATOR (CF) 1000000000000000000000000000000000000		FEEE PART OF THE P							
FUEL CELL - PHOS ACID (CF) 1000	1 A) 77 1 0000000000000AB 1 A) 77 B) 80 C) 85								
STEAM TURB GEN - CUAL (CF)			0.000	21年2日でする 第年記載のもおががないませんを 3					
STIRLING ENG GEN (CF) 1900	10000000000000000000000000000000000000								
MHD GENERATOR (CF) !									
MHD/STEAM GEN (CF) !									
THERMIONIC GEN (CT) ISSESSESSESSESSESSESSESSESSESSESSESSESSE	1 A) .1240000E+08			***************************************				06 (V	
STEAM TURB GEN (NF)!	\$ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S							
GAS TURB GEN (NF) : BEG				4		A) 80			
RADIOISOTOPE GEN (NF)!			A) 90						
STEAM TURB GEN (SOLAR)!									
ORGANIC VAP TURB GEN (SOLAR) I DELECTEDENTETTETTETTETTETTETTETTETTETTETTETTETTE	**************			***************************************	A				
GAS TURB GEN (SOLAR) SPECETOR CONTROL CONTRO	***************************************		000000000000000000000000000000000000000						
PHOTOVOLTAIC (SOLAR) : DESTRESSES SESTES SES	***************************************		200000000000000000000000000000000000000	8					
	8) 85	•	64 (3 68 (8						
MIND TURB GEN 10-5: ECCOCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	90000000000000000000000000000000000000	3							
WIND TURB GEN 20-11000	985					a			
WIND TURB GEN 20-51800	8) 92	8							
FLYWHEEL STORAGE!	SAL SHED THE								
BATTERY STORAGE!									

FLTWHEEL STURAGE	BATTERY STORAGE!	
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REQUIREMENT: 250 KW CONTINUOUS

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GAS TURB GEN - SC(CF): 486964666666666666666666666666666666666	CECCCCCCCCCCCCCA	
GAS TURB GEN - RC(CF)!		
DIESEL GENERATOR (CF) 100	ENDER DE CONTRACTOR DE LA CONTRACTOR DE CONT	
SPARK IGN ENG GEN (CF) 100		
FUEL CELL - PHOS ACID (CF) 100	A S T T T T T T T T T T T T T T T T T T	
STEAM TURB GEN - COAL (CF)!	A) 77 B) 80 C) 85	
STEAM TURB GEN - OIL (CF)!		
STIRLING ENG GEN (CF) 100		
MHD GENERATOR (CF) !		
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF) !	THERMIONIC GEN (CF) I PROPERTIES TO SELECT THE SECOND SECO	
STEAM TURB GEN (NF)!	A190	
ORGANIC VAP TURB GEN (NF) 1981		
GAS TURB GEN (NF) !	GAS TURB GEN (NF) 1440-1440-1440-1440-1440-1440-1440-1440	
RADIOISOTOPE GEN (NF)!	A) .58600000E+06	A) 90
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR) FOOL		
GAS TURB GEN (SOLAR) INDI	***************************************	
PHOTOVOLTAIC (SOLAR) !	01000000000000000000000000000000000000	
WIND TURB GEN 10-1100	1	
WIND TURB GEN 10-5100	8) 85	
WIND TURB GEN 20-1198	••••••	
WIND TURB GEN 20-5148	3) 85	
FLYWHEEL STORAGE!	8) 85	
FLYWHEEL STORAGE!		

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GAS TURB GEN - SC (PS)	GAS TURB GEN - SC.(CF): Legender Control of	
GAS TURB GEN - RC (CF) !	A) 77 B) 85 C) 90	
DIESEL GENERATOR (CF) : 400000	(CF) [Controlled Controlled Contr	
SPARK IGN ENG GEN (CF): 000000000000000000000000000000000000	A) 77	
FUEL CELL - PHOS ACID (CF) GORGES		
STEAM TURB GEN - COAL (CF)!		
STEAM TURB GEN - OIL (CF)!		
STIRLING ENG GEN (CF) 1000000	(CF) interestables and a second contract of the second contract of t	
MHD GENERATOR (CF) !		
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF) : 000000	THERMIONIC GEN (CF) INTERRESPONDENCE TO THE PROPERTY OF THE PR	
STEAM TURB GEN (NF)!	4900001 200000000000000000000000000000000	
ORGANIC VAP TURB GEN (NF) 1940000	ORGANIC VAP TURB GEN (NF) ! SECTION OF SECTI	
GAS TURB GEN (NF) I DECEMBER OF	A) 80	
RADIOISOTOPE GEN (NF)!		
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR) I DOBOGO	ORGANIC VAP TURB GEN (SOLAR) I DEPRESENCE CONTROLLE CONT	
GAS TURB GEN (SOLAR) I BEGEROE	GAS TURB GEN (SOLAR) I COLORD	
PHOTOVOLTAIC (SOLAR) 188888	PHOTOVOLTAIC (SOLAR) 1000000000000000000000000000000000000	
LIOI NAG BRUT GNI	B) 85 C) 95	
	8)85	
ואח וסאם פבע זה-פו	8 (B)	
TIND TOKE GEN COLLEGE	8) 85	
WIND TURB GEN 20-51 40000	WIND TURB GEN 20-5140600000000000000000000000000000000000	
FLYWHEEL STORAGE!		
BATTERY STORAGE!		

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GAS TURB GEN - SC(CF) 1090		
GAS TURB GEN - RCICF)!	A) 77 B) B5 C) 90	
DIESEL GENERATOR (CF) 1988		
SPARK IGN ENG GEN (CF) 10000		
FUEL CELL - PHOS ACIO (CF)	はいて、一般では、一般では、一般では、一般では、一般では、一般では、一般では、一般では	
STEAM TURB GEN - COAL (CF)	在企业的企业中的企业中的企业中的企业中的企业中的企业中的企业中的企业中的企业中的企	
STEAM TURB GEN - OIL (CF)	以基础的以外以近时间的数据中心的以上的表现是是这种的可以是是有关的。 一种是一种,	
STIRLING ENG GEN (CF) 10000		
MHD GENERATOR (CF)	A.1855	
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF)		
STEAM TURB GEN (NF)		
ORGANIC VAP TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) I GLOGGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGE	i
GAS TURB GEN (NF) 10000		
RADIOISOTOPE GEN (NF)	A190	
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR)		
GAS TURB GEN (SOLAR)		
PHOTOVOLTAIC (SOLAR)		
WIND TURB GEN 10-11		
WIND TURB GEN 10-51		
WIND TURB GEN 20-11		
WIND TURB GEN 20-51		
FLYWHEEL STORAGE!		
BATTERY STORAGE!		

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GAS TURB GEN - SCICF)								
GAS TURB GEN - RCICF)								
DIESEL GENERATOR (CF)								
SPARK IGN ENG GEN (CF)								
FUEL CELL - PHOS ACID (CF) 16	9							
STEAM TURB GEN - COAL (CF)	1 A) 77 B) 80 C) 85							
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN (CF)								
MHD GENERATOR (CF.)								
MHD/STEAM GEN (CF)								
THERMIONIC GEN (CF)								
STEAM TURB GEN (NF)								
ORGANIC VAP TURB GEN (NF)	ののののであるのでの からなかる							
GAS TURB GEN (NF)								
RADIOISOTOPE GEN (NF)								
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB GEN (SOLAR) ISTOCOCCOCCOCC	***************************************	1						
GAS TURB GEN (SOLAR) I BEREEFERDE	08 (V)	THE PROPERTY OF STREET, STREET						
PHOTOVOLTAIC (SOLAR) : GRESSESSESSESSESSESSESSESSESSESSESSESSESS	1 000000000000000000000000000000000000			30000000				
WIND TURB GEN 10-1101010000000000			8 8	8) 85 C) 95				
8) 85 WIND TURB GEN 10-5: 00000000000000000000000000000000000	1 69000000000001							
MIND TURB GEN 20-11806m60608	1 8) 85							
18) 85 WIND TURB GEN 20-5:00000008	18) 85							
FLYWHEEL STORAGE	1							
BATTERY STORAGE	· · · · · · · · · · · · · · · · · · ·			455 C 60 455840				
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GAS TURB GEN - SC(CF) 19090909	100000000				
GAS TURB GEN - RC(CF)					
DIESEL GENERATOR (CF) 1000000000000000000000000000000000000	V2000000000				
SPARK IGN ENG GEN (CF) I BEREGEGEGEGEGEGE	***************************************				
FUEL CELL - PHOS ACID (CF) interaggenessessessessessesses		***************************************	999		
STEAM TURB GEN - COAL (CF)		•	69 (2) 09 (9)		
STEAM TURB GEN - OIL (CF)					
STIRLING ENG GEN (CF) 19909988A	V				
MHD GENERATOR (CF)	6				
MHD/STEAM GEN (CF)					
THERMIONIC GEN (CF)					
STEAM TURB GEN (NF)					
ORGANIC VAP TURB GEN (NF) I DECEMBER CONTINUES OF THE SECOND OF THE SECO		***************************************	***************************************	***************************************	
GAS TURB GEN (NF)	GAS TURB GEN (NF) : COLLOCATION COLLOCATIO			A) 80	
RADIOISOTOPE GEN (NF)	************			***************************************	
STEAM TURB GEN (SOLAR)					
ORGANIC VAP TURB GEN (SOLAR)		100.78			
GAS TURB GEN (SOLAR)	The find the state of the state				
PHOTOVOLTAIC (SOLAR)					
WIND TURR GEN 10-11					
WIND TURB GEN 10-5					
WIND TURB GEN 20-11	· 新安徽市公司 医动物检查员 医水水溶液				
WIND TURB GEN 20-5	The Sheathander and				
FLYWHEEL STORAGE					
BATTERY STORAGE	***************				

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	EQUIREMENT: 250 KW CONTINUOUS
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	KG PER YEAR	
	2	80.
GAS TURB GEN - SCICF	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
GAS TURB GEN - RC(CF)	1(3)	
DIESEL GENERATOR (CF)	DIESEL GENERATOR (CF): 0100000000000000000000000000000000000	
SPARK IGN ENG GEN (CF.)	ENG GEN (CF) I COLLEGE	
FUEL CELL - PHOS ACTO (CF)	FUEL CELL - PHOS ACID (CF) INGREDIONOPORTHONOPORTHONOCONORD	
STEAM TURB GEN - COAL (CF)	A) 77 8) 80 C) 85	
STEAM TURB GEN - OIL (CF)	ī	
STIRLING ENG GEN (CF.	STIRLING ENG GEN (CF) : 00000000000000000000000000000000000	
MHD GENERATOR (CF)	4)85	
MHD/STEAM GEN (CF)		
THEAMIONIC GEN (CF.		
STEAM TURB GEN (NF)		
ORGANIC VAP TURB GEN (NF)	** 「「「「「「「「」」」 「「「」」」 「「「」」」 「「」」 「「」」	
GAS TURB GEN (NF)		
RADIOISOTOPE GEN (NF)		
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR)		
GAS TURB GEN (SOLAR)	R) china senser	
PHOTOVOLTAIC (SOLAR)	(a)	
WIND TURB GEN 10-1	The state of the s	
WIND TURB GEN 10-5	-salesation and the salesation of the salesation	
WIND TURB GEN 20-1	- 1 日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日	
WIND TURB GEN 20-51	-5 ************************************	
FLYWHEEL STORAGE	GE 13 12 18 17 19 10 18 18 18 18 18 18 18 18 18 18 18 18 18	
BATTERY STORAGE!		

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REQUIREMENT: 250 KM CONTINUOUS

	•	85	5.	.75	1.0	1977 DOLLARS/YEAR	1.5	1.75
VOUSCOME DE LA COMPANY DE LA C					900000	4		
GAS TURB GEN - RC(CF)				•	0613 CO 60 11 18			
DIESEL GENERATOR (CF) INCOMMONOCOMONOMA A) 77 SPARK IGN ENG GEN (CF) I COMMONOMINE COMMON CO		A) 77		ð	9			
FUEL CELL - PHOS ACID (CF) IBOBOSCOCOCOCOCOCOCOCO			BCBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	T10				
STEAM TURB GEN - COAL (CF)		ā	A) 77 B) 80 C) 85	52				
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN (CF) !!	i	V.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	¥ ***					
MHD GENERATOR (CF)		A) 85						
MHD/STEAM GEN (CF)								
THERMIONIC GEN (CF) ISSESSED CONTROL OF THE PROPERTY OF THE PR						V		
STEAM TURB GEN (NF)					3	2		
ORGANIC VAP TURB GEN (NF) : CECENOSTREPERSON CONTINUES C			***************************************				***************************************	
GAS TURB GEN (NF) COLOROGE CONTINUENCE C			-			08 (V	V	
RADIOISOTOPE GEN (NF)							2	
STEAM TURB GEN (SOLAR)								
RGANIC VAP TURB GEN (SOLAR)	9							
GAS TURB GEN (SOLAR)								
PHOTOVOLTAIC (SOLAR)								
WIND TURB GEN 10-1								
WIND TURB GEN 10-5								
WIND TURB GEN 20-11								
WIND TURB GEN 20-5								
FLYWHEEL STORAGE!								
BATTERY STORAGE!								

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250 KW Cont.

PARAMETER

7) Environmental Constraints

noneminormoderatemajor

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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GAS TURB GEN - SC (CF)	1-	T-	0	0	•				<u> </u>	<u> </u>	T_
GAS TURB GEN - RC (CF)	T										T
DIESEL GENERATOR (CF)	1	1_	0	0							
SPARK IGN ENG GEN(CF)	1	Ī	0	0		-		1_	Ī	Ē	-
FUEL CELL - PHOS ACID (CF)	-	1	1	1	1	-	0	1	Ī	广	
STEAM TURB GEN - COAL(CF)	F	+	-	1	=	=	1	Ē	-	-	-
STEAM TURB GEN - OIL (CF)	+		+		-	1		1	\vdash		+
STIRLING ENG GEN(CF)	+	-	+	1	+	t-	1	-	-	\vdash	+
MHD GENERATOR (CF)	+	+	0	0	0		0	0	+	-	十
MHD/STEAM GEN(CF)	+	-	-	+		† -		+-	\vdash		+
THERMIONIC GEN(CF)	+	\vdash	-	-	+-	+-	-	+	-	+-	+-
STEAM TURB GEN(NF)	+	-	0	0	1	0	10	10	-	-	+
ORGANIC VAP TURB GEN(NF)	+	-	-		-	-	+-	-	+	+-	+-
GAS TURB GEN(NF)	+	-	-	-	-	+	0	-	-	0	0
RADIOISOTOPE GEN(NF)	+	-	-	+	-	+	0	-	1	0	0
STEAM TURB GEN (SOLAR)	A)				-	-	N.	-	-	0	+
ORGANIC VAP TURB (SOLAR)	+	-	-	-	-	-	-	1	-	-	+
GAS TURB GEN (SOLAR)	+	•	-	=	-	1=	0	-	-	0	+
PHOTO VOLTAIC (SOLAR)	+	-	-	+	-	=	0	-	-	-	+
WIND TURB GEN (ALL)	-	-	-	-	-	-	-	-	-	-	-
FLYWHEEL STORAGE	+	=	-	-	-	-	-	-	-	-	-
	+	10	-	-	-	-	-	-	-	-	-
BATTERY STORAGE					150						

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250 KW Cont.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

O - minor limitation

• - major limitation

• - overriding limitation

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GAS TURB GEN - SC (CF)	-	-	0	•	-	-	-	-
GAS TURB GEN - RC (CF)								0.00
DIESEL GENERATOR (CF)	-	-	-	•	-	-	-	-
SPARK IGN ENG GEN(CF)	-	-	_	•	-	_	-	-
FUEL CELL - PHOS ACID(CF)	-	-	_	•	-	_	_	-
STEAM TURB GEN - COAL (CF)								
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN(CF)	-	_	0		-	-	-	-
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)								
THERMIONIC GEN(CF)	0	0	0		-	-	-	-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)	0	-	0	0	-	-		_
GAS TURB GEN(NF)		-		0	-	-		-
RADIOISOTOPE GEN(NF)								
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB (SOLAR)		-	0	-		-	-	-
GAS TURB GEN (SOLAR)	-	-	0	-		-	-	-
PHOTOVOLTAIC (SOLAR)		-	-	-		-	-	-
WIND TURB GEN 10-1	-	-	-	-	-		-	-
WIND TURB GEN 10-5	-	-	-	-	-		-	-
WIND TURB GEN 20-1	-		-	F	-		-	-
WIND TURB GEN 20-5	-	-	-	F	-		-	-
FLYWHEEL STORAGE				1				
BATTERY STORAGE				1				1-

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250 KW Cont.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

 - Characteristic not observed in system operation

O - Characteristic has minor effect on system performance

 Characteristic has moderate effect on system performance

 Characteristic has major effect on system performance

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GAS TURB GEN - SC (CF)		0	-	-	0	0	0
GAS TURB GEN - RC (CF)							
DIESEL GENERATOR (CF)	0	0	-	-	0	0	0
SPARK IGN ENG GEN(CF)	•	0	-	-	0	0	0
FUEL CELL - PHOS ACID (CF)	-	-	-	-	-	-	-
STEAM TURB GEN - COAL(CF)							
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN(CF)	0	0	-	-	0	0	0
MHD GENERATOR (CF)							
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-		0	0
STEAM TURB GEN(NF)							
ORGANIC VAP TURB GEN(NF)	0	0	-	-	0	0	0
GAS TURB GEN (NF)	0	0	-	-	0	0	0
RADIOISOTOPE GEN(NF)							
STEAM TURB GEN (SOLAR)		Sp. 17.					
ORGANIC VAP TURB (SOLAR)	-	0	•	-	0		-
GAS TURB GEN (SOLAR)	-	-	•	-		-	-
PHOTOVOLTAIC (SOLAR)	-	-	•	-	-	-	-
WIND TURB GEN 10-1	-	-	-	•	-	-	-
WIND TURB GEN 10-5	-	_	-		-	-	-
WIND TURB GEN 20-1	-		-		-	-	-
WIND TURB GEN 20-5	-		-		-	_	1
FLYWHEEL STORAGE							Ī
BATTERY STORAGE							
			166			-	

REGUIREMENT: 250 KW CONTINUOUS

2.0 2.5 3.0 3.5 4.0 4.5		A) 77 B) 65 C) 90	Y	To soo	FUEL CELL - PHOS ACID (CF) IPPRESENTATION OF THE PROPERTY OF T	A THE SECOND SEC		V-000000000000000000000000000000000000					V	V 000000000000000000000000000000000000	0.00					i	89.82	8) 92	8) 85	8982	
3. 1.0 1.5	GAS TURB GEN - SC (CF) : PERFECTION CONTROL OF THE GENERAL CONTROL OF THE CONTROL		DIESEL GENERATOR (CF): POCTOCOLOGO PERCENTION CONTINUED	SPARK IGN ENG GEN (CF) 00000000000000000000000000000000000				:				8 7	V10600000000000000000000000000000000000				(A))-1 i coccoccoccoccoccoccoccoccoccoccoccoccoc	***************************************		
	GAS TURB GEN - SCICF)	GAS TURB GEN - RCICF)	DIESEL GENERATOR (CF)	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACID (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF)	MHO GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) 100	GAS TURB GEN (NF) 16	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	PRBANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR) 100	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-5:0000	WIND TURB GEN 20-11	WIND TURB GEN 20-510	FLYWHEEL STORAGE!	BATTERY STORAGE!

250 KW Cont

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	M
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	М
SPARK IGN ENG GEN(CF)	M
FUEL CELL - PHOS ACID(CF)	P
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	202 - 2
STIRLING ENG GEN(CF)	M
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	M
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	P
GAS TURB GEN (NF)	P
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	8 8 8 8 8 8 8 8
WIND TURB GEN 10-5	127222
WIND TURB GEN 20-1	2 6 7 4 2 6 4
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	
BATTERY STORAGE	

REGULREMENT: 250 KW CONTINUOUS

COLD START MINUTES X 10 .7 .8			######################################					40400000000000000000000000000000000000	A) 90	GEN (SOLAR)	A) 80							
e.			00E+03 C) .18															
.2			3 8) .180000					3										
•	A) 77 8) 85 C) 90	# # # # # # # # # # # # # # # # # # #	A) .18000000E+0	P on	A) 85						GEN (SOLAR) 1968-66-66-66-66-66-66-66-66-66-66-66-66-6		18785 C195	6 69		8 8		
	GAS TURB GEN - SCICF) IG	DIESEL GENERATOR (CF) 1A SPARK IGN ENG GEN (CF) 1A	FUEL CELL - PHOS ACTO (CF) 16 STEAM TURB GEN - COAL (CF) 1	STEAM TURB GEN - OIL (CF)! STIRLING ENG GEN (CF)!A	WERATOR (CF)	MMD/STEAM GEN (CF)! THERMIONIC GEN (CF)!	STEAM TURB GEN (NF)!	ORGANIC VAP TURB GEN (NF) interescontations and an interescontant of the containing of turb gen (NF) interescontant of the containing of turb gen (NF) interescontant of the containing of turb gen (NF) interescontant of tur	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)		AIC (SOLAR)	WIND TURB GEN 10-118	WIND TURB GEN 10-518	WIND TURB GEN 20-118	WIND TURB GEN 20-518	FLYWHEEL STORAGE!	BATTERY STORAGE!

A) 77 B) 80 C)

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PARAMETER

250 KW Cont.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

System	Clitical Materials
GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN .ENG GEN (CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	- 報 - 報 - 章 - 中 - 章 - 中 - 章
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	Not modular
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	200
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	
BATTERY STORAGE	

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250 KW Cent.

PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

The tabulated conditions power system to the exter											
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				TO	ste.	en's	S. J.	COC.	tig s	ses zi	20
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		ton	"Les	8	40	052	May	Mod	4	400	
SYSTEM	AN	etous sir	N'A	N. A.	3,04	"L'E	* 05	The state of the state of	to state	e of the order	of red o
GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	-	-		
GAS TURB GEN - RC (CF)										-	- Co
DIESEL GENERATOR (CF)		0	0	-	0	0	•	-	_	_	
SPARK IGN ENG GEN(CF)	•	0	0	-	0	0	•	-	_	٥	- Co
FUEL CELL - PHOS ACID (CF)	-	-	-	_	0	-	_		_		su
STEAM TURB GEN - COAL(CF)											as ef:
STEAM TURB GEN - OIL (CF)										Winds.	per
STIRLING ENG GEN(CF)	0	0	0	_	0	0	•	_	-		re
MHD GENERATOR (CF)	2	1								•	- Cor
MHD/STEAM GEN(CF)											su
THERMIONIC GEN(CF)	0		-	-		0	0	-			a r
STEAM TURB GEN(NF)							100				on
ORGANIC VAP TURB GEN(NF)	0	0	0	0	7	0		-			
GAS TURB GEN(NF)		0	0	0				-	-	•	- Cor
RADIOISOTOPE GEN(NF)				0	9	-			3		fac
STEAM TURB GEN (SOLAR)				ne Ne			2				ing
ORGANIC VAP TURB (SOLAR)	0	0	0	-	-	0			1-		
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	-			34	
PHOTOVOLTAIC (SOLAR)	-	0		-		-	-	•	1_		
WIND TURB GEN 10-1	0	0	•	-	0	3	-	-			
WIND TURB GEN 10-5	0	0	•	-	0	0	-	-		100	
WIND TURB GEN 20-1	0	0	•	-	0	-	-	-		=	
WIND TURB GEN 20-5	0	0	•	-	0		-			192	
FLYWHEEL STORAGE	-	1	-	1	1			Ī			
BATTERY STORAGE	1										

- Condition does not exist in system
- 0 Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

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GAS TURB GEN - SCICF) 146	C(CF) 146	9		
GAS TURB GEN - RC(CF)!	C(CF)	1 A) 77 B) 85 C) 90		
DIESEL GENERATOR (CF) 10A	(CF) 10A			
SPARK IGN ENG GEN (CF) 1844	(CF) 186A			
FUEL CELL - PHOS ACID (CF) 16	(CF) 16	90.0		
STEAM TURB GEN - COAL (CF)	(CF)	71		
STEAM TURB GEN - OIL (CF)	(CF) !			

5.25

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1977 DOLLARS/YEAR 1.0 1.25

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	(CF)	i G	INF) I BESSES
MHD/STEAM GEN	THERMIONIC GEN	STEAM TURB GEN (ORGANIC VAP TURB GEN (NF) I SESSESSESSESSES
	MHD/STEAM GEN (CF) !		MHD/STEAM GEN (CF): THERMIONIC GEN (CF):0009000000000000000000000000000000000

ORGANIC VAP TURB GEN (NF) ISCOGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG			
~	96		
(NF)	S S	(NF)	LAR)
GEN	GEN	GEN	(50
TURB	GAS TURB GEN (NF) 18A	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)
4	978	0150	5
ORGANIC		RADI	STEAM

STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR)! ************************************	GAS TURB GEN (SOLAR) I DORDONDED BONDON DE LE CONTROL DE LA CONTROL DE L	PHOTOVOLTAIC (SOLAR) I SESSESSESSESSESSESSESSESSESSESSESSESSES	WIND TURB GEN 10-11-00000000000000000000000000000000	WIND TURB GEN 10-510000000000000000000000000000000000
1051	(50	105)	105)	3EN	SEN 1
GEN	GEN	GEN	TAIC	JRB	JRB
LURB	TURB	TURB	DVOL	5	5
EAM	VAP	GAS	PHOT	5	1
ST	ORGANIC				

A) 80 A) 80

11NO TURB GEN 20-1: ## # # # # # # # # # # # # # # # # #	IND TURB GEN 20-51400000000000000000000000000000000000		
20-1	20-51	RAGE	RAGE
BEN	GEN	STO	STO
TURB	TURB	FLYWHEEL STORAGE!	BATTERY STORAGE!
INO	IND	5	8

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STIRLING ENG GEN (CF) IA

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EQUIREMENT:
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WIND TURB GEN 10-11

PHOTOVOLTAIC (SOLAR)

WIND TURB GEN 10-51 WIND TURB GEN 20-11 WIND TURB GEN 20-51 FLYWHEEL STORAGE! BATTERY STORAGE!

		•	8.	v,	27.	BTU/HOUR 1.0	1.25	x 10 1.5	1.75	2.0	2.25	
00 142134 - NB 8874 1981	143											4
102 108 Mrs - 8C(CF)	1431										0 11 6165	60
DIESEL BENERATOR (CF)100	(43)	i		*******		A						
BELLED) NãO BNO MEZ MENDE	160	***************************************	77 / A	*******	*******						V	
** CELL - PHOS ACTO (CF) 100	3		000000000000000000000000000000000000000		0					A) 77		
STEAM THE GEN - COAL (CF)	(6)			A)77 B)80 C)85	80 C) 85							
SPERM TURB GEN - OIL (CF)	Ce											
STIRLING ENG GEN (CF) 180	CE	***************************************		A								
WHO GENERATOR (CF)	Ce		A) 85									
WHO/STEAM GEN (CF)	(CF)											
THERMIONIC GEN (CF) ! 99	(CF)		********	*******						VIII		
STEAM TURB GEN (NF)	(NF)								A) 90			
OPGINIC VAP TURB GEN (NF) 19991919191919191919191919191919191919	(NF)	***************************************	***************************************	*******				4				
GAS TURB GEN (NF) 180	(NF)			********	-		A) 80					
RADIOISOTOPE GEN (NF)	(NF)					A) 90						
STEAM TURB GEN (SOLAR)	LAR											
ORGANIC VAP TURB GEN (SOLAR) ! ##	LAR		********		•	************	•	¥				
1		1	-				A) 80					

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PARAMETER

250 KW.Cont.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL (CF)	Flacingh
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	Name of the state
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	None
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	

SECTION X

FIFTY KILOWATT, CONTINUOUS

REQUIREMENT

Power Level:

50 Kw

Operating Mode:

Continuous

Frequency/Phase:

60 Hz/3Ø

Voltage Level:

480 V

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REQUIREMENT: 50 KW CONTINUOUS

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GAS TURB GEN - SCICF) IG											
GAS TURB GEN - RC(CF)		A) 17 8185 C190									
DIESEL GENERATOR (CF) 1A											
SPARK IGN ENG GEN (CF) IA											
FUEL CELL - PHOS ACID (CF) 16		90.0									
STEAM TURB GEN - COAL (CF)		A) // 8/ 8/ 6/ 6/ 85									
STEAM TURB GEN - OIL (CF)											
STIRLING ENG GEN (CF) IA											
MHD GENERATOR (CF)	41 03										
MHD/STEAM GEN (CF)											
THERMIONIC GEN (CF) IN				***************************************	V					111	
STEAM TURB GEN (NF)!									06 (¥		
ORGANIC VAP TURB GEN (NF) IN			*******		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	********		***************************************			
GAS TURB GEN (NF) I			***************************************				A) 80	***************************************			
RADIOISOTOPE GEN (NF)!							06 (V				
STEAM TURB GEN (SOLAR)											
ORGANIC VAP TURB GEN (SOLAR) IN				***************************************	VIII	٧					
GAS TURB GEN (SOLAR) IN		VIIIIIIIIII			88 (4						
PHOTOVOLTAIC (SOLAR)!	A) 80	:	9		Aur						
WIND TURB GEN 10-116	181	A) 77 8) 85 C) 95	8177 8185 C195								
WIND TURB GEN 10-514		58 (8 / / (V	:	V	4						
WIND TURB GEN 20-116	A			A) 77 B) 85	2						
WIND TURB GEN 20-518	800000000000000000000000000000000000000	:	A								
FLYWHEEL STORAGE!		616	CB 18								
BATTERY STORAGE!											

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ATTERY STORAGE		
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GAS TURB GEN - SCICF) 190	(60)	GEGEGGGGGCB8A A)77 B)85 C)90
GAS TURB GEN - RC(CF)	(G)	
DIESEL GENERATOR (CF) 198	6	11年の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の
SPARK IGN ENG GEN (CF) I OF	(3)	
FUEL CELL - PHOS ACID (CF) 180	(CF)	
STEAM TURB GEN - COAL (CF)	(CF)	
STEAM TURB GEN - OIL (CF)	CE	
STIRLING ENG GEN (CF) 100	169	
MHD GENERATOR (CF)	CF	这里是这种,我们也是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
MHD/STEAM GEN (CF)	CF.	
THERMIONIC GEN (CF) 100	(CF)	V1000000000000000000000000000000000000
STEAM TURB GEN (NF)!	(NF)	
ORGANIC VAP TURB GEN	CNE	ORGANIC VAP TURB GEN (NF.) I DORFOCELONGESCHOOLGESCHOO
GAS TURB GEN (NF) 100	(NF)	08 (Y
RADIOISOTOPE GEN (NF)	S C	以及不可能是不得不可能的。
STEAM TURB GEN (SOLAR)	LAR	
ORGANIC VAP TURB GEN (SOLAR) 189	LAR)	40000000000000000000000000000000000000
GAS TURB GEN (SOLAR) 186	LARI	A) 80
PHOTOVOLTAIC (SOLAR) 199	LAR	V300000100000010101010101010101010101010
MIND TURB GEN 10-1100	10-11-	1 .55000000E+07 A177 B185 C) BBGGGGGGGGA
WIND TURB GEN 10-5180	10-51) 77 B) 85
WIND TURB GEN 20-1188	20-11	A)77 8185
WIND TURB GEN 20-5100	20-51	
FLYWHEEL STORAGE	RAGE	AIT BIBS
BATTERY STORAGE!	RAGE	

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Generator (cr) Althouse Alt		
36800000E-06 36800000E-06 36800000E-06 A) 70 A) 80 A) 77 B) 85 A) 78 B) 85 A) 78 B) 85 B)		
8180 C185 A190 A190 36800000E-06 A177 8185		[1] [2] [2] [2] [2] [2] [2] [2] [2] [2] [2
A) 90 A) 70 A) 77 B) 85 B) 85 B) 85 A) 77 B) 85		
A) 90 A) 77 B) 85 B)		
A) 90 A) 71 B) 85	STEAM TURB GEN - OIL (CF): STIRLING ENG GEN (CF): A) 65 MHD GENERATOR (CF): MHD/STEAM GEN (CF): THERHIONIC GEN (CF): STEAM TURB GEN (NF):	
A) 90 A) 80 A) 80 A) 80 A) 80 A) 80 A) 80 A) 70 A) 70 A) 71 B) 85 B) 86	STIRLING ENG GEN (CF) 10000A MHD GENERATOR (CF) 1 THERMIONIC GEN (CF) 1 STEAM TURB GEN (NF) 1	
A) 90 A) 90 A) 90 A) 80 B) 80 A) 77 B) 85 A) 77 B) 85 A) 77 B) 85 A) 77 B) 85	MHD GENERATOR (CF)! MHD/STEAM GEN (CF)! THERHIONIC GEN (CF)! STEAM TURB GEN (NF)!	
A) 90 36800000E-06 A) 80 A) 80 A) 80 A) 77 8) 85	MHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I	
A) 90 36800000E+06 A) 80 A) 80 CONTROLLED BY A) 77 B) 85 CH 177 B) 85 CH 177 B) 85 CH 177 B) 85 CH 177 B) 85	THERMIONIC GEN (CF) entents of the second	
A) 90 3680000E+06 A) 80 A) 80 COTTOUR FOR THE BIRTH BEAUTH BE		
A) 80 3680000E+06 A) 80 A) 80 CONTINUE TO THE SET T		
3680000E 06 A) 80 A) 80 A) 80 B) 85 B) 85 B) 85 A) 77 B) 85 A) 77 B) 85 A) 77 B) 85		=
A) B) B) A) T7 B) B5 A) T7 B) B5 A) T7 B) B5 A) T7 B) B5	2	A) 90
A) 80 A) 80 CONTINUE OF THE SECOND	STEAM TURB GEN (SOLAR)!	
AS TURB GEN (SOLAR)		
### ### ##############################	7	
MIND TURB GEN 10-1:0000000000000000000000000000000000	PHOTOVOLTAIC (SOLAR) : 8484	A0000000000000000000000000000000000000
WIND TURB GEN 10-5; BORGEN WIND TURB GEN 20-5; BORGEN FLYWHEEL STORAGE!	WIND TURB GEN 10-110080	A) 77 B) 85 C)
MIND TURB GEN 20-1188884 MIND TURB GEN 20-51888888888888888888888888888888888888	WIND TURB GEN 10-5:0000	
	WIND TURE GEN 20-11-8866A	
FLYWHEEL STORAGE!		
	FLYWHEEL STORAGE!	
	BATTERY STORAGE!	

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GAS TURB GEN - SC (CF) I see terescente section content conten	F)						9			
GAS TURB GEN - RC(CF)						A) 77 B) B5 C) 90	06(0			
DIESEL GENERATOR (CF) INDEPENDENCE DESCRIPTION	(F) 0400000		******							
SPARK IGN ENG GEN (CF) I DESTREE CENTA	F) 1000000		rky Ika							
FUEL CELL - PHOS ACTO (C	ACID (CF) I CONTROLL CONTROL C									
STEAM TURB GEN - COAL (CF)	Ē			A) 77 8) 80 C) 85	C) 82					
STEAM TURB GEN - OIL (CF)	- <u>.</u>									
STIRLING ENG GEN (CF) I GOLD CONTROLL CONTROL	F)		***************************************			*				
MHD GENERATOR (CF)	- <u>.</u>				A) 85					
MHD/STEAM GEN (CF)	- : <u>.</u>									
THERMIONIC GEN (CF): 4-1-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4	F) i		*******		•		¥ • • • • • • • • • • • • • • • • • • •			
STEAM TURB GEN (NF)						A) 90				
ORGANIC VAP TURB GEN (NF) I GERROGERERERERERERERERERERERERERERERERER	F)				*					
GAS TURB GEN (NF) I DEDUCEDED	F) 1	v		A) 80						
RADIOISOTOPE GEN (NF)	F) (A) 90									
STEAM TURB GEN (SOLAR)										
ORGANIC VAP TURB GEN (SOLAR) I DECEMBER CONTROLLES DE CONT	(R)		***************************************				***			
GAS TURB GEN (SOLAR) (OSCOPOROSCOSCOSCOSCOSCOSCOSCOSCOSCOSCOSCOSCOSCO	(R) I 0000000		********	***************************************		A) 80	¥			
PHOTOVOLTAIC (SOLAR) ! ***********************************	R) I				200	A) 80				
WIND TURB GEN 10-11 DECREOOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCO	-11000000				26(2					
WIND TURB GEN 10-51 #000000000000000000000000000000000000	-51 0000000	*******		A) 77 B) 85	0					
MIND TURB GEN 20-110000000000000000000000000000000000	-1:000000	•••••		A) 77 B) 85	0					
WIND TURB GEN 20-51 REGEORGEORGEOGOGOGOGOGOGOGOGOGOGOGOGOGOG	-51 0000000	••••••	•	A) 77 8) 85	0					
FLYMEEL STORAGE	1 30			A) 77 B) 85						
BATTERY STORAGE!	GF! ONCOUNT									

THE THE PART - COLD			•
GAS TURB GEN - SCICETIFFE			
GAS TURB GEN - RCICF)	060 Core 1118		
DIESEL GENERATOR (CF) 1000	¥4000000000000000000000000000000000000		4
SPARK IGN ENG GEN (CF) 1988		V	
FUEL CELL - PHOS ACTO (CF)	· · · · · · · · · · · · · · · · · · ·		
STEAM TURB GEN - COAL (CF)	《《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》中的《中国》		
STEAM TURB GEN - OIL (CF)			
STIRLING ENG GEN (CF) 1980	¥33330111111111111111111111111111111111		1
MHD GENERATOR (CF)	中國 化二甲基甲基 医乳肉素 中國 医阴茎 医阴茎 医乳桂素 医乳桂素 医乳桂素 医自己的 医克里氏 医克里氏氏 医克里氏病 医克克氏病 医皮皮氏病 医皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮皮	A) 85	
MHD/STEAM GEN (CF)			
THERMIONIC GEN (CF)			
STEAM TURB GEN (NF)!	中心教育的 计设计算 医电子性		
ORGANIC VAP TURB GEN (NF) 1988			
GAS TURB GEN (NF) 1868		i	A) 80
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STEAM TURB GEN (SOLAR)			
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GAS TURB GEN (SOLAR)	· 在學院在學院在學院在學院的學院是我們可以不可以不可以所以所以所以所以所以所以所有的可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以可以		
PHOTOVOLTAIC (SOLAR)			
WIND TURB GEN 10-11			
WIND TURB GEN 10-51	\$P\$ 医结核原理性试验检验的 医多形性萎缩性结节 化含素化 医生物		
WIND TURB GEN 20-11	2000年の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の		
WIND TURB GEN 20-51	计显示数据 医牙骨髓 医甲状腺素		
FLYWHEEL STORAGE!			
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REQUIREMENT: 50 KM CONTINUOUS

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GAS TURB GEN - SCICF)		
GAS TURB GEN - RC(CF)		
DIESEL GENERATOR (CF)		
SPARK IGN ENG GEN (CF)		
FUEL CELL - PHOS ACID (CF) 16	-	
STEAM TURB GEN - COAL (CF)		
STEAM TURB GEN - 01L (CF)		
STIRLING ENG GEN (CF)		
MHD GENERATOR (CF)		
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF)		
STEAM TURB GEN (NF)		
ORGANIC VAP TURB GEN (NF)!		
GAS TURB GEN (NF)		
RADIOISOTOPE GEN (NF)		
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) I BEGEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	
GAS TURB GEN (SOLAR)	:	
PHOTOVOLTAIC (SOLAR)	PHOTOVOLTAIC (SOLAR) I PREPERTURE OF THE PROTOCOLD FOR THE PROTOCO	
WIND TURB GEN 10-11	WIND TURB GEN 10-11-00000000000000000000000000000000	95
WIND TURB GEN 10-51	WIND TURB GEN 10-51 FECTION OF THE SECOND OF	
WIND TURB GEN 20-1:00000000000000000000000000000000000	A)77 B)85	
WIND TURB GEN 20-51		:
FLYWHEEL STORAGE!	A) 77 0) 05	
BATTERY STORAGE!		

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GAS TURB GEN - SCICF) 1991	i
GAS TURB GEN - RC(CF)	A) 77 B) 85 C) 90
DIESEL GENERATOR (CF) 1000	
SPARK IGN ENG GEN (CF) 1000	***************************************
FUEL CELL - PHOS ACTO (CF) 1000	
STEAM TURB GEN - COAL (CF)!	A177 8186 C185
STEAM TURB GEN - OIL (CF)!	,更是他们的最级的时间,我们的现在分词是有一个的,我们也是有一个的,我们也是不是有的,我们也是一个的,我们也是一个的,我们也是一个的,我们也是一个的,我们也不是一个一个,我们也不是一个的,我们也不是一个一个一个,我们也不是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
STIRLING ENG GEN (CF) 1000	***************************************
THE DESTRUCTION (CF)	A1855 A185 A185 A185 A185 A185 A185 A185
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)!	
ORGANIC VAP TURB GEN (NF) IREC	
GAS TURB GEN (NF) 1808	
RADIOISOTOPE GEN (NF)!	A) 90
STEAM TURB GEN (SOLAR)!	
ORGANIC VAP TURB GEN (SOLAR)!	
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	
MIND TURB GEN 10-11	
SOUR WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	
FLYWHEEL STORAGE!	
STATE STATES	

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BATTERY STORAGE!

PARAMETERS 64 FUEL AMOUNT/YEAR

THERMIONIC GEN (CF) !

STEAM TURB GEN (NF) ORGANIC VAP TURB GEN (NF) GAS TURB GEN (NF)

STEAM TURB GEN (SOLAR)

RADIOISOTOPE GEN (NF)

ORGANIC VAP TURB GEN (SOLAR)

PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-51 WIND TURB GEN 20-11 WIND TURB GEN 20-5 FLYWHEEL STORAGE

GAS TURB GEN (SOLAR)

5.0

x 10 x 10

KG PER YEAR 1.0 1.25

SPARK IGN ENG GEN (CF) I GEORGE GEORGE GEORGE GEORGE GEORGE GEORGE GEORGE GEORGE A) 77

STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) A) 85

STIRLING ENG GEN (CF) 14

MHD GENERATOR (CF) MHD/STEAM GEN (CF)

GAS TURB GEN - RC(CF)

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GAS TURB GEN - SCICE) 1880	(CF) 1								4					•
GAS TURB GEN - RCICF)	((4)							A) 77 8) 85 C) 90	06()					
DIESEL GENERATOR (CF) 18988888888888888888888888888888888888	G.			A										
SPARK IGN ENG GEN (CF) : 4489-646-646-646-646-666-666-666-666-666-66	(CF)	•					1							
FUEL CELL - PHOS ACID (CF) ISSESSESSESSESSESSESSESSES	(65)	•		#C00000	8									
STEAM TURB GEN - COAL (CF)	(CF) !		•	A) // 8) 80 C) 83	6									
STEAM TURB GEN - OIL (CF)	(CF)													
STIRLING ENG GEN (CF) 1000	(CF)		V	Y										
MHD GENERATOR (CF)	5		A) 85											
MHD/STEAM GEN (CF)	3													
THERMIONIC GEN (CF)	5				*****			***************************************						
STEAM TURB GEN (NF)	CNF)						3	V) 90						
ORGANIC VAP TURB GEN (NF) 1886	CNE							***************************************		i			V0000000000000000000000000000000000000	1
GAS TURB GEN (NF) FREE	(NE)	A) . 730	. 73000000E+05	2	i	-		***************************************	i	i			. 7300000E+05	1
RADIOISOTOPE GEN (NF)	(NF)		. 73000000E+05	•									A) 90	
STEAM TURB GEN (SOLAR)	LAR													
ORGANIC VAP TURB GEN (SOLAR)	LAR		以 學 於 是 以 學											
GAS TURB GEN (SOLAR)	LAR													
PHOTOVOLTAIC (SOLAR)	LAR													
WIND TURB GEN 10-11	10-11	2000年 1000 日本日本	10	を表示の (1976) (2) (2005年 - 1977年)										
WIND TURB GEN 10-51	10-5		2000年の日本	10000000000000000000000000000000000000			W 10 10 10 10 10 10 10 10 10 10 10 10 10							
WIND TURB GEN 20-11	20-11	· · · · · · · · · · · · · · · · · · ·	0.000000											
WIND TURB GEN 20-51	20-51													
FLYWHEEL STORAGE!	RAGE						4.000	中国教育 医二氏性神经 不可以有一次表现人物不可以的现在分词的现在分词		NAME OF THE OWNER, OWNE				
BATTERY STORAGE!	RAGEI						A. 19 Common W. 19 Common Williams		2 10				ng en	

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50 KW Cont.

PARAMETER

7) Environmental Constraints

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The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	4.ce	'Su'	6	*c	\$0.	+ 60	4 20	78 Q3	ري چن	20	430
AS TURB GEN - SC (CF)	1-	T-	10	10	1.			Ta	Π		
AS TURB GEN - RC (CF)	T		1	1	1	1	1	1	0	Ť	
IESEL GENERATOR (CF)	1-	1_	0	0		0			-		
SPARK IGN ENG GEN(CF)	Ė	† <u>-</u>	0	0	0	1	0	-	-	Ť	-
FUEL CELL - PHOS ACID (CF)	+	1	1_		1	-	0	+	-	广	
STEAM TURB GEN - COAL(CF)	十	✝₹	+	+	十	1	10	+	-	=	
STEAM TURB GEN - OIL (CF)	+	+	1	-	\vdash	1	-	-	-	\vdash	
STIRLING ENG GEN(CF)	+	1	-	+	+	1	+-	+	+	1	\vdash
MHD GENERATOR (CF)	+	+	10	10	0	0	0	0	+=	-	-
MHD/STEAM GEN(CF)	+	+	+-	+-	+	-	+	+-	+	\vdash	
THERMIONIC GEN(CF)	+-	+-	+ -	+-	+	-	+	+	-	-	
STEAM TURB GEN(NF)	+-	-	10	10	1	0	10	0	-	-	-
ORGANIC VAP TURB GEN(NF)	+	-		-	-	-	+	-	-	-	
GAS TURB GEN(NF)	+		-	-	-	-	0	-	-	0	0
RADIOISOTOPE GEN(NF)	+	10	-	-	=	-	0	-	-	0	0
STEAM TURB GEN (SOLAR)	+	-	-	-	-	-	-	-	-	-	
ORGANIC VAP TURB (SOLAR)	-	-	-	-	-	-	-	-	-	-	
GAS TURB GEN (SOLAR)	+	•	-	1-	-	-	0	-	-	0	-
PHOTOVOLTAIC (SOLAR)	-	1=	-	=	-	-	0	-	-	-	-
VIND TURB GEN (ALL)	-	-	-	1-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
FLYWHEEL STORAGE											
BATTERY STORAGE											

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50 KW Cont.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

o - minor limitationo - major limitation

• - overriding limitation

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SYSTEM	40	40	et vo	L'AS	30	4	6 25 C	44
GAS TURB GEN - SC (CF)	-	-	0		-	-	-	-
GAS TURB GEN - RC (CF)				8				
DIESEL GENERATOR (CF)	_	_	-		_	_	-	-
SPARK IGN ENG GEN(CF)	-	4			-	-	-	_
FUEL CELL - PHOS ACID(CF)	_	_			-	-	-	-
STEAM TURB GEN - COAL(CF)		H						
STEAM TURB GEN - OIL(CF)			6					
STIRLING ENG GEN(CF)	-		0		-	-	-	-
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)								
THERMIONIC GEN(CF)	0	0	0		-			
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)	0	-	0	0	-			-
GAS TURB GEN(NF)				0	-	-		-
RADIOISOTOPE GEN(NF)				T				
STEAM TURB GEN (SOLAR)					- 6			
ORGANIC VAP TURB (SOLAR)		-	0	1_		-		
GAS TURB GEN (SOLAR)	-	-	0	1		-	_	-
PHOTOVOLTAIC (SOLAR)	-	-	-	1		-	-	-
WIND TURB GEN 10-1	L	-	-	1-	-		-	-
WIND TURB GEN 10-5	-	-	-	-	-		-	-
WIND TURB GEN 20-1		-	-	1-	-		-	-
WIND TURB GEN 20-5	L	-	-		L		-	-
FLYWHEEL STORAGE	1			1	1	Ť		
BATTERY STORAGE	1		-	-	1		1	1

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BURNS AND ROE INC WOODBURY NY
USAF TERRESTRIAL ENERGY STUDY. VOLUME III. PART I. SUMMARY DATA--ETC(U)
MAY 78 D C HALL, A CARLSON, D FULLER, R REYER F33615-76-C-2171
AFAPL-TR-78-19-VOL-3-PT-1 NL AD-A061 071 UNCLASSIFIED 3 OF 5 ADA 5 Marie Marie

50 KW Cont.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance nderce of capacity are out to the order to t

cherd to do capability to latitude latic To ad capability like the consists of a capability like the consists of a capability like the consists of the capability like Anderce of solar ind core in the Lation

SYSTEM	S. S.	00	De	Se	016	De,	47
GAS TURB GEN - SC (CF)		0	-	-	0	0	0
GAS TURB GEN - RC (CF)	Section 2						
DIESEL GENERATOR (CF)	0	0	-	_	0	0	0
SPARK IGN ENG GEN(CF)	•	0	-	-	0	0	0
FUEL CELL - PHOS ACID (CF)		-	-	-	-	_	-
STEAM TURB GEN - COAL(CF)				Š.			
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN(CF)	0	0	-	-	0	0	0
MHD GENERATOR (CF)							
MHD/STEAM GEN(CF)	200						
THERMIONIC GEN(CF)	0	0	-	_		0	0
STEAM TURB GEN(NF)	THE STREET	No.					
ORGANIC VAP TURB GEN(NF)	0	0	1-	-	0		0
GAS TURB GEN (NF)	0	0	_	-		0	0
RADIOISOTOPE GEN(NF)							
STEAM TURB GEN (SOLAR)	100						
ORGANIC VAP TURB (SOLAR)	-	0		-	0		-
GAS TURB GEN (SOLAR)	10	1-		-	0	_	-
PHOTOVOLTAIC (SOLAR)		-	•	-	-		-
WIND TURB GEN 10-1	2	12	-	•	-	-8	-
WIND TURB GEN 10-5	-	-	-		-	-83	-
WIND TURB GEN 20-1	_		1-		1-	-	N. S
WIND TURB GEN 20-5		-	1-		1.	1-	
FLYWHEEL STORAGE	Ī			-	1		Ť
BATTERY STORAGE		1	1	254	1		

REGUIREMENT: SO KW CONTINUOUS

EFFICIENCY PERCENT x 10 .0 .0 .0 .0 .0 .0	GAS TURB GEN - SCICF): 000000000000000000000000000000000000	GAS TURB GEN - RC(CF)!	DIESEL GENERATOR (CF): ####################################	SPARK IGN ENG GEN (CF) : # # # # # # # # # # # # # # # # # #	FUEL CELL - PHOS ACID (CF): 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	STEAM TURB GEN - COAL (CF)!	STEAM TURB GEN - OIL (CF)!	STIRLING ENG GEN (CF) : STORES CONTROL OF STREET	MHD GENERATOR (CF) I	HHD/STEAM GEN (CF)!	THERMIONIC GEN (CF) BOSTO BO	STEAM TURS GEN (NF)!	ORGANIC VAP TURB GEN (NF) : PETETETETETETETETETETETETETETETETETETET	GAS TURB GEN (NT) I DECEMBER OF THE PROPERTY O	RADIOISOTOPE GEN (NF) !	STEAM TURB GEN (SOLAR)!	REANIC VAP TURB GEN (SOLAR) : DESCRIBERED	GAS TURB GEN (SOLAR) : PERFEDENCE DESCRIPTION OF THE PERFECT OF TH	PHOTOVOLTAIC (SOLAR) PREFIGEREESES		10000		WIND TURB GEN 20-5: secons consequence consequence consequence consequence		BATTERY STORAGE!
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50 KW Cont

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Туре
GAS TURB GEN - SC (CF)	м
GAS TURB GEN - RC (CF)	1 (a) (a) (b) (a) (b) (a) (b) (b) (b) (b) (b) (b) (b) (b) (b) (b
DIESEL GENERATOR (CF)	м
SPARK IGN ENG GEN(CF)	M
FUEL CELL - PHOS ACID(CF)	T
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL (CF)	4 9
STIRLING ENG GEN(CF)	М
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	P
GAS TURB GEN(NF)	4 (2) 8 5 (2) 5 (2)
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	-
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	p
FLYWHEEL STORAGE	
BATTERY STORAGE	

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	A)77 B)85 C)90		\$ 2.77	V14000000000000000000000000000000000000			125					A) .18000006:03	V0000000000000000000000000000000000000			¥332311932136211932194321943019431943194319431443144444444444444			Con	200 May 1 Ma			900		は、一年 1950年
GAS TURB GEN - SC (CF) 1G	GAS TURB GEN - RC (CF)	DIESEL GENERATOR (CF)!A	SPARK IGN ENG GEN (CF) 14	FUEL CELL - PHOS ACID (CF) 100	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) IA	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) 186	GAS TURB GEN (NF) 199	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) 1981	GAS TURB GEN (SOLAR) 186	PHOTOVOLTAIC (SOLAR) 1D	WIND TURB GEN 10-110	WIND TURB GEN 10-510	WIND TURB GEN 20-110	WIND TURB GEN 20-510	FLYWHEEL STORAGE	BATTERY STORAGE	南子 田 子 日 一 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日

PARAMETER

-50 KW Cont.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC(CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID (CF)	Fully modular
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	The state of the s
MHD/STEAM GEN(CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	Not modular
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	
BATTERY STORAGE	

50 KW Cont.

PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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SYSTEM	- AUF	e vito	S. Airo	State of the state	ह त	The	* POE	THE TOTAL STATE OF	N'A'
GAS TURB GEN - SC (CF)	0	•	0	_		0	•	-	-
GAS TURB GEN - RC (CF)									
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	_	-
SPARK IGN ENG GEN(CF)	•	0	0	-	0	0	•	_	-
FUEL CELL - PHOS ACID (CF)	1-	-	_	_	0	200	_		-
STEAM TURB GEN - COAL (CF)									
STEAM TURB GEN - OIL (CF)									
STIRLING ENG GEN(CF)	0	0	0	10710	0	0	•	_	_
MHD GENERATOR (CF)									
MHD/STEAM GEN(CF)									
THERMIONIC GEN(CF)	0	•	-	-	•	0	0	_	_
STEAM TURB GEN(NF)									
ORGANIC VAP TURB GEN(NF)	0	0	0	0	_	0	•	_	-
GAS TURB GEN(NF)	•	0	0	0	_			-	-
RADIOISOTOPE GEN(NF)				erta.	12630				
STEAM TURB GEN (SOLAR)									
ORGANIC VAP TURB (SOLAR)	0	0	0	-	-	0	_	•	-
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	-	•	-
PHOTOVOLTAIC (SOLAR)	-	0	-	-	0	-	-	•	-
WIND TURB GEN 10-1	0	0	•	-	0		_	-	•
WIND TURB GEN 10-5	0	0	•	1	0	-	-	-	•
WIND TURB GEN 20-1	0	0	•		0	-	-	_	•
WIND TURB GEN 20-5	0	0	•		0	_	_		•
FLYWHEEL STORAGE									
BATTERY STORAGE									

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists
 and is a governing
 factor in determin ing system perform ance and reliability

REQUIREMENT: SO KW CONTINUOUS

	•			2.	e.	1977	1977 DOLLARS/YEAR	. × 10 5	 •	•
6AS TURB GEN - SC(CF) 1 0006 (A) 7 GAS TURB GEN - RC(CF) 1	CF) 1 40 7 CF) 1 CF) 1		8) 85 C) 90							
DIESEL GENERATOR (CF) 1000A 1 A) 77 SPARK IGN ENG GEN (CF) 100000	67	41.4								
FUEL CELL - PHOS ACID (CF) 16	CF) 16 A) 7	77 80	A) 77 A) 77 B) 80 C) 85							
STEAM TURB GEN - COAL (CF) ! STEAM TURB GEN - OIL (CF) !	£ £									
STIRLING ENG GEN (CF) I MHD GENERATOR (CF) I	CF) IA	\$								
MHD/STEAM GEN (CF)	- 6									
THERMIONIC GEN (CF.) 19900	- C- C-		A190							
ORGANIC VAP TURB GEN (NF) 10000	NF.		V	1						
GAS TURB GEN (NF): GA RADIOISOTOPE GEN (NF);	NF) I @A		Mark Dayson							
STEAM TURB GEN (SOLAR)	AR)									
ORGANIC VAP TURB GEN (SOLAR) I PEGE	AR)						V0000000000000000000000000000000000000	1		
PHOTOVOLTAIC (SOLAR) I CODE	AR)		200		10000000					
WIND TURB GEN 10-110 MIND TURB GEN 10-510	0-110 1-110 1-110 1-110		A) 77 B) 85							A) 77 8) 85 C)
WIND TURB GEN 20-11D	0-110 0-510	77 8185	S							
FLYWHEEL STORAGE	AGE ! A) 77	77 8) 85	26							
BATTERY STORAGE	AGE!									

REQUIREMENT: 50 KM CONTINUOUS

WIND TURB GEN 20-51 FLYWHEEL STORAGE! BATTERY STORAGE!

15	0	7	5.	۳,	.0 .1 .2 .3 BTU/HOUR x 10		9.	0.
GAS URB GEN - SCICF		•			Att 10 10 10 10 10 10 10 10 10 10 10 10 10	6		
GAS TURB GEN - RCICF	RC (CF)					A111 6163 C140		
DIESEL GENERATOR (CF) 10040000000000000000000000000000000000			*********					
SPARK IGN ENG GEN (CT) I SACCESS SESSES SESSES SESSES SESSES SESSES SESSES			***************************************	***********	***************************************	4		
FUEL CELL - PHOS ACID (CF) 1000000000000000		000000000						
STEAM TURB GEN - COAL (CF)		A) 11 B) 60 C) 03	0				19日日本在衛用湯田田下口	
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN (CF) HOUSE COLOURS		V						
MHD GENERATOR (CF)	A 185							
MHD/STEAM GEN (CF)	-=							
THERMIONIC GEN (CF) I BERESSESSESSESSESSESSESSESSESSESSESSESSES	i	***************************************	***********	***************************************	/2000			
STEAM TURB GEN (NF)					æ(u			
ORGANIC VAP TURB GEN (NF) : SECONDOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC	i		***************************************	V				
ASS TURB GEN (NT) LEGEROSSESSESSESSESSESSESSESSESSESSESSESSESSE	i		08 (V					
RADIOISOTOPE GEN (NF)		26.0						
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB GEN (SOLAR	i	(SOLAR) I GERGEOGGEOFFEEFEEFEEFEEFEEFEEFE	***************************************					
GAS TURB GEN (SOLAR	i	(SOLAR) : 00000000000000000000000000000000000						
PHOTOVOLTAIC (SOLAR)	-=-							
WIND TURB GEN 10-11								
WIND TURB GEN 10-51	- 5							
WIND TURB GEN 20-11	-=							

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50 KW Cont.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL (CF)	157.00
STEAM TURB GEN - OIL (CF)	and Revenue and an income
STIRLING ENG GEN(CF)	None
MHD GENERATOR (CF)	AONE
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	None
GAS TURB GEN (NF)	None
RADIOISOTOPE GEN(NF)	Aone
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	Possibly lead for conventional batteries Possibly lead for conventional batteries
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	

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SECTION XI

FIFTY KILOWATT, 8 HOUR

REQUIREMENT

Power Level: 50 Kw

Operating Mode: 8 hours per day

Frequency/Phase: 60 Hz/3Ø

Voltage Level: 480 V

0.	.25 .5 .75 1.0 1.25 1.5 2.0 2.25
GAS TURB GEN - SC(CF)16 1 A)77 GAS TURB GEN - RC(CF)1	16 A)77 8)85 C)90
DIESEL GENERATOR (CF) IA	· · · · · · · · · · · · · · · · · · ·
SPARK IGN ENG GEN (CF) IA	
FUEL CELL - PHOS ACID (CF)16	
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF) IA	
MHD GENERATOR (CF)!	
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF) I MERRE	THERMIONIC GEN (CF) INTRACTOR CONTROL
STEAM TURB GEN (NF)!	A) 90
ORGANIC VAP TURB GEN (NF) I GOGGGG	ORGANIC VAP TURB GEN (NF) I CONCRETE CONTROL C
GAS TURB GEN (NF) I BEBEE	AND GEN (NF) INCREMENTATION OF THE PROPERTY OF
RADIOISOTOPE GEN (NF)!	10 10 Miles (M. 10 Miles)
STEAM TURB GEN (SOLAR)!	
ORGANIC VAP TURB GEN (SOLAR) I GOODO	ORGANIC VAP TURB GEN (SOLAR) INDECEDENCE CONTROL OF CON
GAS TURB GEN (SOLAR) !	0004
PHOTOVOLTAIC (SOLAR) 10C0000	PHOTOVOLTAIC (SOLAR) I CONTRESENCE CONTRESENCE CONTRESENCE CONTRESENCE CONTRESENCE
WIND TURB GEN 10-1:08000000	A)77 B)85 C)95
MIND TURB GEN 10-5:00000000000000000000000000000000000	A)77 B)85 PERBERERERERERERERERERERERERERERERERERER
WIND TURB GEN 20-51400B000000	40 000 A 000 000 A 000 000
FLYWHEEL STORAGE! AGGCBGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	ADDETECTOR OF A DESCRIPTION OF A DESCRIP
BATTERY STORAGEID	

	(CF)	GAS TURB GEN - SC(CT): ####################################				
GAS TURB GEN - RC(CF)	(CF)					
DIESEL GENERATOR (CF):000	6 6	A A A A A A A A A A A A A A A A A A A				
FUEL CELL - PHOS ACID (CF) 188	5	1 A) 77				
STEAM TURB GEN - COAL (CF)!	(CF)	4				
STEAM TURB GEN - OIL (CF)	(CF)	20.9 可能用推定的有限的原理。				
STIRLING ENG GEN (CF) :	(CF)	A 00000				
MHD GENERATOR (CF)	(CF)	3				
MHD/STEAM GEN (CF)	(CF)	的 经分价 化电子 医电子 医电子 医电子 医电子 医甲状腺素 医甲状腺素 医克里氏病				
THERMIONIC GEN (CF) !	(CF)	:		***************************************		
STEAM TURB GEN (NF)	(NF)	1 A) .2830000E+07				A) 90
ORGANIC VAP TURB GEN (NF) IRE	(NF)	=				
GAS TURB GEN (NF) 1844	(NF)		***************************************	**********	***************************************	A0000000000
RADIOISOTOPE GEN (NF)	(NF)					A) 90
STEAM TURB GEN (SOLAR)!	LAR	· 中には、1000年以前の工業人のでは、それの政策でもののです。				
ORGANIC VAP TURB GEN (SOLAR) 198	LAR	:	***************************************			
GAS TURB GEN (SOLAR) !	LAR)	_				A) 80
PHOTOVOLTAIC (SOLAR) !	LAR)	4)80 #147787#168688888894168898984416888666688888866618888888888	***************************************	************	A0000000000000000000000000000000000000	
WIND TURB GEN 10-11008	10-1				A) 77 B) B5 C) 95	
WIND TURB GEN 10-51998	10-5	A) 77 B) 85				
WIND TURB GEN 20-1188	20-1	A) 77-B) 85				
WIND TURB GEN 20-51888	20-5	48466				
FLYWHEEL STORAGEISSS	RAGE	4) 77 B) B5				
BATTERY STORAGE: 88A	RAGE	19948 A) 85 C) 90	06			

ORGANIC VAP TURB GEN (NF) 1970147016171617161716171617161716171617161716	V	を対すれたというでは、100mmのでは	GEN (SOLAR)!	GEN (SOLAR): GEGESGESGESGESGESGESGESGESCENA CONTRACTOR	GEN (SOLAR) IBBA	PHOTOVOLTAIC (SOLAR) INCREMENTABLE PROPERTIES CONTRACTOR CONTRACTO		WIND TURB GEN 10-5:00000000000000000000000000000000000		WIND TURB GEN 20-51080000000000000000000000000000000000	FLYWHEEL STORAGEIGHBOCHBOCHBOCA		1 A) 77 B) 85
ORGANIC VAP TURB GEN	GAS TURB GEN	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (S	ORGANIC VAP TURB GEN (S	GAS TURB GEN (S)	PHOTOVOLTAIC (S	WIND TURB GEN	WIND TURB GEN	WIND TURB GEN 20-11884	WIND TURB GEN	FLYWHEEL ST	BATTERY ST	

STEAM TURB GEN (NF)!

WAS COLUMN

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1977 DOLLARS

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6AS TURB GEN - SCICF) 10000EA 1 A) 77 B) 85 C) 90

1 A) 77 8) 80 C) 85

STEAM TURB GEN - COAL (CF)

STEAM TURB GEN - OIL (CF)

STIRLING ENG GEN (CF) 10A

MHO GENERATOR (CF)

MHD/STEAM SEN (CF)

DIESEL GENERATOR (CF):00A

SPARK IGN ENG GEN (CF):00000A

FUEL CELL - PHOS ACID (CF):06

	.0 .5 1.0 1.5 2.0 2.5 3.0	1.0	1.5	2.0	2.5	3.0	3.5	4.0
GAS TURB GEN - SC (CF) GEOFFEEFEEFEEFEEFEEFEEFEEFEEFEEFEFFEEFEFFEEFEF		***************************************	***************************************	•	•	9		
GAS TURB GEN - RC(CF)	0.625 C 0.825 pd4 V				A) 77 B) 85 C) 90	06() 9		
DIESEL GENERATOR (CF) 195000000000000000000000000000000000000	***************************************		4					
SPARK IGN ENG GEN (CF) IPEDEDDOOUTA	V	A) 77						
FUEL CELL - PHOS ACID (CF) 199094900000000000000000000000000000000	***************************************	***************************************		9				
STEAM TURB GEN - COAL (CF)	908080K		A) 73 B)	A) 77 8) 80 C) 85			41.14	
STEAM TURB GEN - OIL (CF)	1.000000000000000000000000000000000000	******						
STIRLING ENG GEN (CF) I PROPERTIES CONTROLLES CONTROLLE	***************************************			***************************************	****			
MHD GENERATOR (CF)				A) 85				
MHD/STEAM GEN (CF)								
THERMIONIC GEN (CF) 1449046940406406406606666666666666666666		***************************************	***********		***************************************	A		
STEAM TURB GEN (NF)	STREET NEWSTREET	Sections and			A) 90			
ORGANIC VAP TURB GEN (NF) : STORTS CONTROLLES CONTROLLE				¥ *****				
GAS TURB GEN (NF) LOCATERECOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOC	***************************************	***************************************	A) 80	Y				
RADIOISOTOPE GEN (NF)	AND SOUTH SELECTION		A) 90					
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB GEN (SOLAR) I DESCRIPTION OF STATEMENT O		***************************************			***************************************	79984		
A)80 AS TURB GEN (SOLAR):000000000000000000000000000000000000		***************************************			A) 80	****		
PHOTOVOLTAIC (SOLAR) 164866688866686666		9			A) 80			
MIND TURB GEN 10-11-000-00-00-00-00-00-00-00-00-00-00-	1 TT (A 1 TT E	A) 77 8) 85 C) 95		0				
4) 77 8) 85 MIND TURB GEN 10-510000000000000000000000000000000000		***************************************	A) 77 B) 85	985				
MIND TURB GEN 20-110000000000000000000000000000000000			A) 77 B) 85	92				
WIND TURB GEN 20-519898999999999999999999999999999999999			A) 77 B) B5	000				
FLYWHEEL STORAGE! ### ### \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		***************************************	A) 77 B) 85	95	****			
BAT (FRY STORAGE)	1			A) 80 B)	A) 80 8) 85 C) 90			
	450	B)	A) 77 8) 85	85				

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GAS TURB GEN - SCIC						900000000000000000000000000000000000000				
GAS TURB GEN - RCIC	16			,		A) 77 8185 C) 90	06			
DIESEL GENERATOR (C		V1000000000000000000000000000000000000				***************************************				1
SPARK TON ENG BEN (C		VICED 1 10000000000000000000000000000000000	************	*************	•				VIII.	
FUEL CELL - PHOS ACTO (C	(6)	(中) · · · · · · · · · · · · · · · · · · ·						1100		

STIRLING ENG GEN (CF) ITACPORTED CONTINUES CON	MHD GENERATOR (CF) !	HO/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)!
00000000000000000000000000000000000000				

STEAM TURB GEN - COAL (CF)!

STEAM TURB GEN - OIL (CF)

MHD/STEAM	MHD/STEAM GEN (CF)!		
THERMIONIC GEN (CF)	GEN (CF) !		
STEAM TURB GEN (NF)	GEN (NF)		
ORGANIC VAP TURB	GEN (NT) TERRESCORESCORESCORESCORESCORESCORESCORES	ORGANIC VAP TURB GEN (NF) : A EAGGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGEGE	V2000000000000000000000000000000000000
64S TURB	GEN (NF) I DESCRIPTION OF THE PROPERTY OF THE	GAS TURB GEN (NF) ! CONTRACTOR CO	M M
		06.7	

6 6	RADIOISOTOPE GEN (NF)!	STEAM TURB GEN (SOLAR)!	AR
2 3			_
VAP TURB GEN (NF) 14	GEN	(50	(\$0
880	340	GEN	GEN
= =	5	8	8
VAP	015	2	2
210	PADI	FEAM	YAP.
ORGANIC VAP TURB GEN (NF) 11		S	ORGANIC VAP TURB GEN (SOLAR)!

(AR)	LAR	10-	10-5	20-1	20-5
(\$0	(50	BEN	GEN	GEN	GEN
BEN	TAIC	URB	URB	URB	URB
TURB	OVOL	WIND TURB GEN 10-1	WIND TURB GEN 10-5	WIND TURB GEN 20-1	WIND TURB GEN 20-5
GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	I		=	=

FLYWHEEL STORAGE! BATTERY STORAGE!

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•	.25 .5 .75 1.0 1.25 1.5	x 10 1.5
GAS TURB GEN - SCICE)!		
GAS TURB GEN - RC(CF)		
DIESEL GENERATOR (CF)		
SPARK IGN ENG GEN (CF) !		
FUEL CELL - PHOS ACID (CF) 16		
STEAM TURB GEN - COAL (CF)!	A) / B) 80 C) 85	
STEAM TURB GEN - OIL (CF)		
STIRLING ENG GEN (CF)		
MHD GENERATOR (CF)		
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF)!		
STEAM TURB GEN (NF)	學工作學學教養學教育學教育學院 医克克斯氏 经有效的 医克里氏 医阿里氏氏 医阿里氏虫 医斯勒氏虫虫 医甲基氏虫虫 医二种 医多种 医牙髓病	
ORGANIC VAP TURB GEN (NF)!		
GAS TURB GEN (NF)!		
RADIOISOTOPE GEN (NF)!		
STEAM TURB GEN (SOLAR)!		
ORGANIC VAP TURB GEN (SOLAR) I DECENDED CONTROLL	***************************************	
GAS TURB GEN (SOLAR) : # 4780	**************************************	
PHOTOVOLTAIC (SOLAR) 184	S AS 80 PHOTOVOLTAIC (SOLAR) INCORREGEORGEOFFEEFFEEFFEEFFEEFFEEFFEEFFEEFFEEFFEEF	
WIND TURB GEN 10-1100	A) 77 B) 85 C) 95 WIND TURB GEN 10-114144444444444444444444444444444444	
WIND TURB GEN 10-5144	A) 77 B) 85 WIND TURB GEN 10-51 nest nest nest nest nest nest nest nest	
WIND TURB GEN 20-1190	WIND TURB GEN 20-11 SECRETARION OF S	
WIND TURB GEN 20-5194	BEGEN 20-51-61-62-61-61-61-61-61-61-61-61-61-61-61-61-61-	
FLYWHEEL STORAGELERA	A) (1 0) 03	
BATTERY STORAGEID	A) 80 8185 C) 90	
	1 A) 77 B) 85 TO PERSONAL SECTION OF COMPANY AND SECTION OF SECTIO	

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6AS TURB GEN - SC (CF) 196896	(a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c
GAS TURB GEN - RC(CF)	F) A) 77 B) 85 C) 90
DIESEL GENERATOR (CF)	F) 100000000A
SPARK IGN ENG GEN (CF) 1000000	Y00000V
FUEL CELL - PHOS ACIO (CF) 188	
STEAM TURB GEN - COAL (CF)	F) I
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF) 18	Z) Income of
MHD GENERATOR (CF)	[7]
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN IN	ORGANIC VAP TURB GEN (NF) INTOTACTIONS CONTROLL STATEMENT OF TURB GEN (NF) INTOTACTION OF TURB GEN (NF)
GAS TURB GEN (N	GAS TURB GEN (NF) I DISCONDENSION OF THE PROPERTY OF THE PROPE
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	の 動き 動物 中心 できます 一般 自然 できません 自然 をきまる できません しょうしゅう しゅうしゅう かんしゅう できない 大学 できない あいません はいない はい ないしょう マンド・ファン・ファン・ファン・ファン・ファン・ファン・ファン・ファン・ファン・ファン
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	
BATTERY STORA	BATTERY STORAGE OFFICE OF THE STORE OF THE
	SEL ALISOCOCO E-US CONTRACTOR CON
	REGULREMENT: 50 KM 8 HR PARAMETER: 5 WEIGHT

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FLYWHEEL STORAGE! BATTERY STORAGE!

WIND TURB GEN 20-5!

	.0 .1 segnies 2 20 .3	KG PER YEAR	or ×.	a refract	•	•
GAS TURB GEN - SC (CF) 186	.T. :				1000	
GAS TURB GEN - RCICFIL				A) 77 8	11 85 C1 90	
DIESEL GENERATOR (CF) 100	F) 1 appropriate the control of the	٧		(
FUEL CELL - PHOS ACID (CF) 100			A) 77			
STEAM TURB GEN - COAL (CF)	A)77 B)80 C)85					
STEAM TURB GEN - OIL (CF)						
STIRLING ENG GEN (CF) 140						
MHD GENERATOR (CF)	F):					
MHD/STEAM GEN (CF)						
THERMIONIC GEN (CF) 190	(7)		100			
STEAM TURB GEN (NF)	A) 90	A) 90				
ORGANIC VAP TURB GEN (NF)						
GAS TURB GEN (NF)						
RADIOISOTOPE GEN (NF)	16					
STEAM TURB GEN (SOLAR)						
ORGANIC VAP TURB GEN (SOLAR)	- 6					
GAS TURB GEN (SOLAR)!	8)					
PHOTOVOLTAIC (SOLAR)	R) !					
WIND TURB GEN 10-11	7					
WIND TURB GEN 10-51	0 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -					
WIND TURB GEN 20-11	E.					

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A) 77 81 80 C) 85 A) 90	פשם ימעם פביי ברוכנייי			800000000000000000000000000000000000000			2.0	
A) 717 A) 1070000E-50 A) 77 8) 80 C) 85 A) 85 A) 90 A) 90	GAS TURB GEN - RC(CF)!				8) 82			
A) 77 8) 80 C) 85 A) 77 8) 80 C) 85 A) 77 8) 80 C) 85 A) 90	DIESEL GENERATOR (CF) !!	V						
A) 77 B) 90 C) 85 A) 77 B) 90 C) 85 A) 95 A) 96	SPARK IGN ENG GEN (CF) I			***********	***************************************	***************************************	I	
	JEL CELL - PHOS ACIO (CF) !!		10000					5216
	EAM TURB GEN - COAL (CF)!	B 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
A) 95 A) 95	TEAM TURB GEN - OIL (CF)							
V) 00 (V)	STIRLING ENG GEN (CF) !!	i						
	MHD GENERATOR (CF)!	A) 85						
	MHD/STEAM GEN (CF)!							
	THERMIONIC GEN (CF) !!	***************************************	***************************************		1			
	STEAM TURB GEN (NF)!			A) 90				
	RGANIC VAP TURB GEN (NF)				***************************************	***************************************		
The second of th	GAS TURB GEN (NF) !!	***************************************			***************************************	***************************************		
	RADIOISOTOPE GEN (NF)							:
	STEAM TURB GEN (SOLAR)!							
	NIC YAP TURB GEN (SOLAR)!							
	GAS TURB GEN (SOLAR)!							
	PHOTOVOLTAIC (SOLAR)!							
	WIND TURB GEN 10-11							
	WIND TURB GEN 10-51							
	WIND TURB GEN 20-11							
## COOCUPACION OF THE PROPERTY	WIND TURB GEN 20-51							
A)80 8)85 C)90	FLYWHEEL STORAGE!	34	10 61 85 C1 90					

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PARAMETER

7) Environmental Constraints

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The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	E.C.	ELIC	0	*	\$0.	+ 40	**	Y 00	60	· č	4 °
GAS TURB GEN - SC (CF)	1	T	0	0	1				T	T	Γ
GAS TURB GEN - RC (CF)	十	1	10	1	1	1	1	-	+	1	1
DIESEL GENERATOR (CF)	+		0	0	1				T		-
SPARK IGN ENG GEN(CF)	宀	1	0	0	0	10	0	1	1-	1	广
FUEL CELL - PHOS ACID (CF)	+	+	10		0	十		-	1-	-	-
STEAM TURB GEN - COAL(CF)	╁	+	+-	1-	-	+	0	+	+	-	1
STEAM TURB GEN - OIL (CF)	+-	+	-	1	+	1	-	-	-	+-	+
STIRLING ENG GEN(CF)	+	-	+	+	-	+-	1	+	+	+	+
MHD GENERATOR (CF)	+	+	0	0	0	10	8		-	-	十
MHD/STEAM GEN(CF)	+	+	+	+-		+	+	+	-	1	1
THERMIONIC GEN(CF)	+-	+	-	+	-	+	-	+	-	-	+
STEAM TURB GEN(NF)	+	+-	10	0	10	0	10	10	-	-	+
ORGANIC VAP TURB GEN(NF)	+	+	+	+	\vdash	\vdash	-	-	\vdash	1	1
GAS TURB GEN (NF)	+	-	1	+	+	+	0	1	+	0	0
RADIOISOTOPE GEN(NF)	+	-	1-	+	十	-	0	1	+	0	0
STEAM TURB GEN (SOLAR)	+		1	\vdash			-	-	+	-	+
ORGANIC VAP TURB (SOLAR)	100	-	-	+	-		+		41	-	+
GAS TURB GEN (SOLAR)	+	•	+	丰	+	-	10	-	+	0	-
HOTOVOLTAIC (SOLAR)	-	+	-	+	+	+	0	-	1	-	1
WIND TURB GEN (ALL)	+	-	-	+	-	-	+	-	+	-	1
FLYWHEEL STORAGE	+	-	+	+	1	+	1	-	+	1	+
BATTERY STORAGE	+	-	-	1	+	-	+	-	+	=	+
BATTERY STORAGE	1=	上	-	1-	1-	1-	<u>-</u>	-	1-	1-	-

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PARAMETER

50 KW 8 Hr.

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation

O - minor limitation

- major limitation

- overriding limitation

The state of the s er color incolorion, red

Watering ted a dating oper. was ted a to the ceas SYSTEM GAS TURB GEN - SC (CF) 0 GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) SPARK IGN ENG GEN(CF) FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN (CF) 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) . THERMIONIC GEN(CF) 0 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) 0 GAS TURB GEN(NF) RADIOISOTOPE GEN(NF) STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) 0 GAS TURB GEN (SOLAR) 0 PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE BATTERY STORAGE 0

STATISTICS IN BRIDE

50 KW 8 Hr.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance the too de the too do the test of the test

e triciency teduction of solar tree latic Lad Capability Little of a lad in the late of the late

SYSTEM	er	201	De	Sper	010	De	17
GAS TURB GEN - SC (CF)		0	_	-	0	0	0
GAS TURB GEN - RC (CF)							1
DIESEL GENERATOR (CF)	0	0	-	_	0	0	0
SPARK IGN ENG GEN(CF)	•	0	-	-	0	0	0
FUEL CELL - PHOS ACID (CF)	_	-	-	-	-	-	-
STEAM TURB GEN - COAL(CF)							
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN(CF)	0	0	-	-	0	0	0
MHD GENERATOR (CF)							Π
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-		0	0
STEAM TURB GEN(NF)							Γ
ORGANIC VAP TURB GEN(NF)	0	0	-	-	0	0	0
GAS TURB GEN(NF)	0	0		-		0	0
RADIOISOTOPE GEN(NF)							1.
STEAM TURB GEN (SOLAR)							
ORGANIC VAP TURB (SOLAR)	_	0		-	0		1-
GAS TURB GEN (SOLAR)	_	-	•	-		-	-
PHOTOVOLTAIC (SOLAR)		-	•	-	-	1-	-
WIND TURB GEN 10-1	-	-	-	•	-	-	-
WIND TURB GEN 10-5	-	-	-		_	-	-
WIND TURB GEN 20-1	-	-	-		-	-	-
WIND TURB GEN 20-5	-	-	1		-	-	1_
FLYWHEEL STORAGE	-		-	-	-	-	-
BATTER STORAGE	-	-	-	-	-	-	-
	-		-				

REQUIREMENT: 50 KM 8 HR

645 TURB GEN - SC(CF) 100

A PROPERTY OF

50 KW 8 HR.

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	M
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	M
SPARK IGN ENG GEN(CF)	М
FUEL CELL - PHOS ACID(CF)	T
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	M
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	0.3
ORGANIC VAP TURB GEN(NF)	F
GAS TURB GEN(NF)	P P
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F.
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	N S S P S S S S
WIND TURB GEN 20-5	y 5 F
FLYWHEEL STORAGE	F
BATTERY STORAGE	т

REQUIREMENT: 50 KW 8 HR

BATTERY STORAGEID

! A) 77 8185

FLYWHEEL STORAGEIG

WIND TURB GEN 20-110 WIND TURB GEN 20-510

WIND TURB GEN 10-510

I A) 77 8) 85 C) 95

PHOTOVOLTAIC (SOLAR) 16

PARAMETER: 12 START-UP TIME

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PARAMETER

50 KW 8 Hr.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System	Critical Materials
GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	61/ 88
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MID/STEAM GEN(CF)	
THERMIONIC GEN(CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	Not modular
GAS TURB GEN (NF)	Not modular
RADIOUSOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	255
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB CEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully modular

The tabulated conditions exist in the power system to the extent indicated.

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SYSTEM	Aug.	St. S	41.0	5,10	S. Cot	40s	THE	50	of wi
GAS TURB GEN - SC (CF)	0	•	0	_		0	•	_	_
GAS TURB GEN - RC (CF)									
DIESEL GENERATOR (CF)	•	0	0		0	0	•	_	-
SPARK IGN ENG GEN(CF)	•	0	0	-	0	0	•	_	_
FUEL CELL - PHOS ACID (CF)	-	-	_	-	0	-	_	_	-
STEAM TURB GEN - COAL (CF)							0		
STEAM TURB GEN - OIL (CF)									
STIRLING ENG GEN(CF)	0	0	0	-	0	0	•	-	-
MHD GENERATOR (CF)									
MHD/STEAM GEN(CF)									
THERMIONIC GEN(CF)	0	•	-	-		0	0	-	-
STEAM TURB GEN(NF)									
ORGANIC VAP TURB GEN(NF)	0	0	0	0	_	0		T_	_
GAS TURB GEN(NF)	•	0	0	0	-			-	-
RADIOISOTOPE GEN(NF)	1				100				
STEAM TURB GEN (SOLAR)				1					
ORGANIC VAP TURB (SOLAR)	0	0	0	-	-	0	-		-
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	-		-
PHOTOVOLTAIC (SOLAR)	-	0	-	183	0	-	-	•	-
WIND TURB GEN 10-1	0	0	•	-	0	1	-	-	
WIND TURB GEN 10-5	0	0		100	0	100	_	-	•
WIND TURB GEN 20-1	0	0		-	0	-	-	-	
WIND TURB GEN 20-5	0	0		-	0	-	-	-	
FLYWHEEL STORAGE	0	Ĭ.	•	1-	_			1_	1
BATTERY STORAGE	-	0	-	-	0	-	-	1-	Ī

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

A) 77 81 85 C1 90 A) 77 81 85 C1 90 A) 77 T 81 80 C1 85 A) 80 69000000E 05 T 81 85	o N	15 MAINT AND OPER
A177 80 LASS C190 A177 8185 C190 A178 8180 C18E A177 8185 C190 A190 A190 A190 A190 A190 A190 A190 A	A.) B0	
A177 8185 C190 A177 8185 C190 A177 8185 C190 A177 A177 8185 C190 A190 A190 A190 A190 A190 A190 A190 A	#\$/YEAR x 10	Ü
A177 8185 C190 A177 8185 C190 A177 8185 C190 A177 A177 8185 C190 A190 A190 A190 A190 A190 A190 A190 A	S S S S S S S S S S S S S S S S S S S	PARAMET
		HAUT MA
		20
		90 83 63 74
	GAS TURB GEN - SC(CF) 18009 GAS TURB GEN - RC(CF) 1 SPARK 1GN ENG GEN (CF) 18009 FUEL CELL - PHOS ACID (CF) 16 STEAM TURB GEN - COAL (CF) 1 STEAM TURB GEN - COAL (CF) 1 STEAM TURB GEN (CF) 1 MHD/STEAM GEN (CF) 1 MHD/STEAM GEN (CF) 1 MHD/STEAM GEN (CF) 1 STEAM TURB GEN (NF) 1 GAS TURB GEN (NF) 1 STEAM TURB GEN (NF) 1 A) RADIOISOTOPE GEN (NF) 1 STEAM TURB GEN (SOLAR) 1 STEAM TURB GEN (SOLAR) 1 A) WIND TURB GEN 10-11 ED WIND TURB GEN 10-11 ED WIND TURB GEN 20-11 ED WIND TURB GEN 20-51 ED WIND TURB CEN 20-51 ED	FLYNHEEL STORAGEIOOG A1 BATTERY STORAGEIA (A1)

GAS TURB GEN (SOLAR) I BEREESESSESSESSESSES

PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-11 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5

STEAM TURB GEN (SOLAR)

RADIOISOTOPE GEN (NF)

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BTU/HOUR

DIESEL GENERATOR (CF) | 44084446464646464644

GAS TURB GEN - RC(CF)

STEAM TURB GEN - COAL (CF)

STEAM TURB GEN - OIL (CF)

MHD GENERATOR (CF)

MHD/STEAM GEN (CF)

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REQUIREMENT: 50 KM 8 HR

BATTERY STORAGE!

FLYWHEEL STORAGE

STEAM TURB GEN (NF)

PARAMETER

50 KW 8 Hr.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	10年4月2
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None .
FUEL CELL - PHOS ACID (CF)	
STEAM TURB GEN - COAL (CF)	Platinum
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	W
GAS TURB GEN(NF)	None
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries Possibly lead for conventional batteries
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	None
	Possibly lead for conventional batteries

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SECTION XII

FIFTY KILOWATT, 1 HOUR

REQUIREMENT

Power Level:

50 Kw

Operating Mode:

1 hour per day

Frequency/Phase:

60 Hz/3Ø

Voltage Level:

480 V

REGUIREMENT: 50 KW 1 HR

1.0 1.25 x 10 1.25 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.		10 1.75 2.0 2.25	A) 90 A) 80 A) 90 A) 90	
	8) 85 C) 90 8) 80 C) 85 A) 86 8) 85 8) 85 8) 85 8) 85 8) 85 8) 85	9		

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WIND TURB GEN 20-51BA FLYWHEEL STORAGEIE®BA BATTERY STORAGEIO

WIND TURB GEN 10-119D 1 A) 77 8) 85 WIND TURB GEN 10-5188A 1 A) 77 8) 85 WIND TURB GEN 20-11D

ORGANIC VAP TURB GEN (SOLAR): PROFINE FOR THE FORM OF THE FORM OF THE GEN (SOLAR): A) .26670000E+07 A) 80 GAS TURB GEN (SOLAR): 1000A

PHOTOVOLTATC (SOLAR): eccesses as a second s

		•	.85	s.	1977 DOLLARS 1.0 1.25	1	1977 DOLLARS		x 10 1.5	1.75	1.75 2.0 2.25	2,25
GAS TURB GEN - SCICE) 1006	CICFI	1986										
GAS TURB GEN - ACICE)	CICE											
DIESEL GENERATOR (CF) IA	(CF)	4										
SPARK IGN ENG GEN (CF) 100A	(CF)											
FUEL CELL - PHOS ACID (CF) 16	(CF)	16										
STEAM TURB GEN - COAL (CF)	CF	1 A) 77 B	A) 77 8) 80 C) 85									
STEAM TURB GEN - OIL (CF)	(6)											
STIRLING ENG GEN (CF) IA	CE											
MHD GENERATOR (CF)	(CF)	A/85										
MHD/STEAM GEN (CF)	(CF.)											
THERMIONIC GEN (CF) 18089	CCF			******				***********	¥2000000000000000000000000000000000000		V	
STEAM TURB GEN (NF)	(NF)									A) 90	0	
ORGANIC VAP TURB GEN (NF) 1888	(NF)			********	**********			*********	V010001100110011001100110011001001001001			
GAS TURB GEN (NF) 10000	(NF)		.30600000E+07	*******	************	:		********	.30600000E+07		A	A) 80
RADIOISOTOPE GEN (NF)	(NF)									A) 90		
STEAM TURB GEN (SOLAR)	OLAR)											

No.

REGUIREMENT: 50 KM 1 HR

x 10						Y 3000000000000000000000000000000000000	Pigo.	4000000 5300000 530000 5400 5400 5400 54	A) 90		ORGANIC VAP TURB GEN (SOLAR): ARRESTRESTRESTRESTRESTRESTRESTRESTRESTRES	A) 80 1750000E+06 1 9) 85 1 8) 85
1977 DOLLARS						¥1000000000000000000000000000000000000			<		***************************************	
.0 .1 .2	18G 1 A) 77 B) 85 C) 90	1 A 77 1 B A 77 B A 77 B B B C 185		1 A) 85				27			***************************************	A) 80 A) 80 A) 1750000E+06 18A A) 77 B) 85 10 A) 77 B) 85 D A) 77 B) 85 BA A) 77 B) 85 CB A) 77 B) 85
	SC (CF)	8 N O	- (65)	N (CF)	N (CF)	N (CF)	N (NF)	N (NF)	(NE) NE)	SOLAR	SOLAR	SOLAR) N 10-1 N 10-5 N 20-5 TORAGE
	GAS TURB GEN - SC(CF): 66 GAS TURB GEN - RC(CF):	DIESEL GENERATOR (CF) A SPARK IGN ENG GEN (CF) 144 FUEL CELL - PHOS ACID (CF) 164	STEAM TURB GEN - COAL (CF)!	STIRLING ENG GEN (CF)!	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) 18986	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) ! 4004	GAS TURB GEN (NF): BEGER RADIOISOTOPE GEN (NF):	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (GAS TURB GEN (SOLAR) 1884 1 A) 80 PHOTOVOLTAIC (SOLAR) 1996 WIND TURB GEN 10-1188A WIND TURB GEN 20-110 WIND TURB GEN 20-110 A) 77 WIND TURB GEN 20-518A FLYWHEEL STORAGEICBBA

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6AS TURB GEN - SC(CF)		SPARK IGN ENG GEN (CF) !		STEAM TURB GEN - COAL (CF)! STEAM TURB GEN - OIL (CF)!	STIRLING ENG GEN (CF) 10	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) 19	STEAM TURB GEN (NF)!	ORGANIC VAP TURB GEN (NF) 19	GAS TURB GEN (NF) 19	RADIOISOTOPE GEN (NF) !	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR) 14	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-110	WIND TURB GEN 10-510	WIND TURB GEN 20-119	WIND TURB GEN 20-519	FLYWHEEL STORAGEIR	BATTERY STORAGEIO

FLYWHEEL STORAGE!
BATTERY STORAGE!

WIND TURB GEN 20-11

CUBIC METERS X 10 .7 .8													V								
600 •••																					
5. 1. 0	19989988888888888888888888888888888888		A1100000000000000000000000000000000000	×*************************************				STIRLING ENG GEN (CF) I GREGGESSER STORES	A) 85				***************************************	GAS TURB GEN (NF) I SEPTEMBER SEPTEMBER							
	6AS TURB GEN - SC(CF) 180898888888888888888888888888888888888	פרי ביניניים	DIESEL GENEF TOR (CF) : 040000000000000000000000000000000000	SPARK IGN ENG GEN (CF) I SPECESSON SPARK	FUEL CELL - PHOS ACTO (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)!	STIRLING ENG GEN (CF)	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)!	ORGANIC VAP TURB GEN (NF) : PRESENCE CONTRACTOR CONTRAC	GAS TURB GEN (NF) !!	RADIOISOTOPE GEN (NF)!	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR)!	PHOTOVOLTAIC (SOLAR)!	WIND TURB GEN 10-11	WIND TURB GEN 10-51

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REQUIREMENT: 50 KW 1 HR

0.	.25 .5 .75 1.0 1.25 1.5 1.75 2.0 2.25	
GAS TURB GEN - SCICE)!		
GAS TURB GEN - RC(CF)		
DIESEL GENERATOR (CF)!		
SPARK IGN ENG GEN (CF)		
FUEL CELL - PHOS ACID (CF) 196		
STEAM TURB GEN - COAL (CF)!		
STEAM TURB GEN - OIL (CF)		
STIRLING ENG GEN (CF)		
MHD GENERATOR (CF)!		
MHD/STEAM GEN (CF)!		
THERMIONIC GEN (CF)!		
STEAM TURB GEN (NF)!		
ORGANIC VAP TURB GEN (NF)!		
GAS TURB GEN (NF)!		
RADIOISOTOPE GEN (NF)!		
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR) IGREGER	Y 000000000000000000000000000000000000	
GAS TURB GEN (SOLAR) I GEREGER	A1000000000000000000000000000000000000	
:		
WIND TURB GEN 10-11646466	43660000E+03 B) .43660000E+03 C) .43660000E+03 A)77 B)85 C)	
WIND TURB GEN 10-51868	V-00-00-00-00-00-00-00-00-00-00-00-00-00	
WIND TURB GEN 20-11-89888	ABBETTER ABBETTER	
WIND TURB GEN 20-5:000000	10000000000000000000000000000000000000	
BATTERY STORAGE:0		

REGUIREMENT: 50 KW 1 HR

GAS TIBB GEN - SCIENT	
משים יביים מביים	
GAS TURB GEN - RC(CF)	A) 77 B) 85 C) 90
DIESEL GENERATOR (CF) 100	V2222222222222222222222222222222222222
SPARK IGN ENG GEN (CF) 190	V0000000000000000000000000000000000000
FUEL CELL - PHOS ACID (CF) 194	
STEAM TURB GEN - COAL (CF)	A) 77 8) 80 C) 85
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF) 190	
MHD GENERATOR (CF)	A) 85
MMD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF) 10	
GAS TURB GEN (NF) 194	
RADIOISOTOPE GEN (NF)	A) -74000000E-U4
STEAM TURB GEN (SOLAR)!	
ORGANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)!	
PHOTOVOLTAIC (SOLAR)	
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	计可用的 医可提升性 计通信性 计通信性 计通信性 计通信性 计可以
FLYWHEEL STORAGE!	

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GAS TURB GEN - SC(CF) GAS TURB GEN - RC(CF) DIESEL GENERATOR (CF)	KG PER YEAR GAS TURB GEN - SC(CF) 00000000000000000000000000000000000	AR X 10 1.25 1.5	2.1
SPARK IGN ENG GEN (CF): 10004004000000000000000000000000000000	SPARK IGN ENG GEN (CF): ### CFC ### CFC ### A		
STEAM TURB GEN - COAL (CF)	1 A) 77 B) 80 C) 85		
STEAM TURB GEN - OIL (CF)			
STIRLING ENG GEN (CF) 19989999999	Y		
MHD GENERATOR (CF)	A) 85 		
MHD/STEAM GEN (CF)			
THERMIONIC GEN (CF	THERMIONIC GEN (CF) : 400000000000000000000000000000000000		
STEAM TURB GEN (NF)	A) 90		
ORGANIC VAP TURB GEN (NF)			
GAS TURB GEN (NF)			
RADIOISOTOPE GEN (NF)	- 2		
STEAM TURB GEN (SOLAR)	â		
ORGANIC VAP TURB GEN (SOLAR)			
GAS TURB GEN (SOLAR)			
PHOTOVOLTAIC (SOLAR)	ā		
WIND TURB GEN 10-1	7		
WIND TURB GEN 10-51			
WIND TURB GEN 20-1	10. 提出的 医动物 医甲状腺 医甲状腺 医甲状腺 医甲状腺 医甲状腺 医甲状腺 医甲状腺 医甲状腺		
WIND TURB GEN 20-5	- 1 日本のでは、中央のでは、中央のできたのでは、中央のでは、大大のでは、大いないでは、大いないが、たいないが、たいないのは、たいないのは、たいないのは、たいないのは、たいないが、たいないないないが、たいないが、たいないが、たいないないが、たいないが、たいないが、たいないが、たいないが、たいないが、たいないないないないが、たいないないないないないないないないないないないないないないないないないないな		
FLYWHEEL STORAGE	96 E		
BATTERY STORAGE	65.1		

2.25

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GAS TURB GEN - SC(CF): 4484844444444444444444444444444444444	CF) ! 000	**********	***************************************			**********	ON E E B B B B B	A		
GAS TURB GEN - RC(CF)	CF) !							A) 11 B) B5 C) 90		
DIESEL GENERATOR (CF): ####################################	CF) :	************		A						
SPARK IGN ENG GEN (CF): 1110111111111111111111111111111111111	CF) 1990	************	**************************************				*******	A		
FUEL CELL - PHOS ACID (CF) TOGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	CF) !	************	*************	89			A) 77			
STEAM TURB GEN - COAL (CF)	CF) !		A) 77 B) B0 C) B5	58 (2						
STEAM TURB GEN - OIL (CF)	(F) !									
STIRLING ENG GEN (CF) I DESCRIPTION OF THE STREET	CF) ! **	***********	V							
MHD GENERATOR (CF)	CF)	A) 85								
MHD/STEAM GEN (CF)	CF)									
THERMIONIC GEN (CF) IRES	CF) 186	V4244444444444444444444444444444444444	***************************************	*******	*******	************	*********	*		
STEAM TURB GEN (NF)	NF) .						A) 90			
ORGANIC VAP TURB GEN (NF) HERALFRAGE FARE FARE FARE FARE FARE FARE FARE FAR	NF) 1 888	***********	***********	*******	********	***************************************	**********			•
GAS TURR GEN (NF) 1888	NF) 1 48	-	***************************************	*******		*************	*********		 A) 80	_ •
RADIOISOTOPE GEN (NF)	NF) 1 A)	.60000000E+04							A) 90	
STEAM TURB GEN (SOLAR)	AR) !									
ORGANIC VAP TURB GEN (SOLAR)	AR) I									
GAS TURB GEN (SOLAR)	AR) :									
PHOTOVOLTAIC (SOLAR)!	AR) !									

REQUIREMENT: 50 KW 1 HR

WIND TURB GEN 20-51

WIND TURB GEN 10-51

WIND TURB GEN 20-11

WIND TURB GEN 10-11

Y781

50 KW 1 Hr.

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM] green	ure chole chine	° 60	*	\$0.	+ 50	* 40	40	* 5°	ర	43
GAS TURB GEN - SC (CF)	1-	T-	0	0	1.			1.	Ι.	L	-
GAS TURB GEN - RC (CF)			1			Ť					
DIESEL GENERATOR (CF)	1_	1-	0	0					1_	1_	1_
SPARK IGN ENG GEN(CF)	1-	1-	0	0	0	-		-	_	-	-
FUEL CELL - PHOS ACID (CF)	1_	-	1-	-	-	1-	0	-	1-	1-	-
STEAM TURB GEN - COAL (CF)											Г
STEAM TURB GEN - OIL (CF)	T										T
STIRLING ENG GEN(CF)	1_	1_	0	0	0					_	
MHD GENERATOR (CF)			1	1	Ĭ	ľ		1	T	1	1
MHD/STEAM GEN(CF)							1	1	1-		T
THERMIONIC GEN(CF)	T		0	0			0		1-		
STEAM TURB GEN(NF)	T	T	1	1		1	1	1		F	广
ORGANIC VAP TURB GEN(NF)	1									0	
GAS TURB GEN (NF)	-	•	1							0	
RADIOISOTOPE GEN(NF)		۲		-	1		1		Ē	1	1
STEAM TURB GEN (SOLAR)			1	T						1	
ORGANIC VAP TURB (SOLAR)	1	1			-		0	1		0	
GAS TURB GEN (SOLAR)	1		1			F	0		F	1	Ē
PHOTOVOLTAIC (SOLAR)	E	<u> </u>	-	E		1	-	-	1	F	F
WIND TURB GEN (ALL)		1			-	1					
FLYWHEEL STORAGE	E	-		1	-	1	1		-	Ē	F
BATTERY STORAGE	+	-	-	1	F	-	1	-	-	F	F
	-1=	1=	1-	1-	28	1-	-	-	-	E-	<u> </u>

- - none

0 - minor

0 - moderate

• - major

50 KW 1 Hr.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

o - minor limitatione - major limitation

• - overriding limitation

ted ted to state of the design to the state of the state

SYSTEM	40	40	100	L. A.D.	S	200	6 25 C	300
GAS TURB GEN - SC (CF)	-	-	0		-	-	-	-
GAS TURB GEN - RC (CF)		1.4						
DIESEL GENERATOR (CF)	-		-		-	-	_	_
SPARK IGN ENG GEN(CF)	-	-	-	•	-	-	-	-
FUEL CELL - PHOS ACID(CF)	-	-	-		-	-	-	
STEAM TURB GEN - COAL(CF)				Ť				
STEAM TURB GEN - OIL(CF)								
STIRLING ENG GEN(CF)	-	-	0		1-	-	_	-
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)				1				
THERMIONIC GEN(CF)	0	0	0		-	-	-	-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)	6	-	0	0				
GAS TURB GEN(NF)	0	-	•	0	1_			
RADIOISOTOPE GEN(NF)								Ī
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB (SOLAR)		-	0	1_				1
GAS TURB GEN (SOLAR)	-	_	0	-		-		-
PHOTOVOLTAIC (SOLAR)	-	-	-	-		-		-
WIND TURB GEN 10-1	_	-	-	-	-		-	
WIND TURB GEN 10-5			-	-	-		-	-
WIND TURB GEN 20-1	-	-	-	-	-		-	-
WIND TURB GEN 20-5	-	-	-	-	-		-	-
FLYWHEEL STORAGE					1			-
BATTERY STORAGE		0	-	1	-	-	-	-

50 KW 1 Hr.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation
- Characteristic has minor effect on system performance
- Characteristic has moderate effect on system performance
- Characteristic has major effect on system performance

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seticianes. SYSTEM GAS TURB GEN - SC (CF) GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) 0 0 0 0 0 SPARK IGN ENG GEN(CF) 0 0 FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN (CF) 0 0 0 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN (NF) 0 0 0 RADIOISOTOPE GEN(NF) STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB CEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE BATTERY STORAGE

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Server Town

REQUIREMENT: 50 KW 1 HR

																								900000000000000000000000000000000000000	A) 80 8) 85 C) 90
	A) 77 B) 85 C) 90		OR (CF) ISOCOGRAPHOS CONTROL CONTROL	POSSESSESSES	A) 77 A) 77	A) 77 8) 80 C) 85		V	A183		700000000000000000000000000000000000000		40000000000000000000000000000000000000	V			\ 0 0 0 0 0 0 0	V0000000000000000000000000000000000000	9	A) 77 B) 65 C) 95	A) 77		Y (4)	20 21 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
SAS AGIT SAS		GAS TURB GEN - RC(CF) !	DIESEL GENERATOR (CF) 190	SPARK IGN ENG GEN (CF) ! POBP	FUEL CELL - PHOS ACID (CF) 188		STEAM TURB GEN - OIL (CF)!	STIRLING ENG GEN (CF) 100	MHD GENERATOR (CF) !	MHD/STEAM GEN (CF)!	THERMIONIC GEN (CF) !	STEAM TURB GEN (NF)!	ORGANIC VAP TURB GEN (NF) ! 88	GAS TURB GEN (NF) 100	RADIOISOTOPE GEN (NF) !	STEAM TURB GEN (SOLAR)!	(SOLAR)	GAS TURB GEN (SOLAR) 188	PHOTOVOLTAIC (SOLAR) 199	WIND TURB GEN 10-1'00	WIND TURB GEN 10-SIGNEGOOD	WIND TURB GEN 20-1:9800000	WIND TURB GEN 20-51 0000000000	FLYWHEEL STORAGE: 88888	

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50 kw 1 HR

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Туре
GAS TURB GEN - SC (CF)	М
GAS TURB GEN - RC (CF)	_
DIESEL GENERATOR (CF)	М
SPARK IGN ENG GEN(CF)	М
FUEL CELL - PHOS ACID(CF)	T
STEAM TURB GEN - COAL(CF)	- 3
STEAM TURB GEN - OIL (CF)	<u>-</u>
STIRLING ENG GEN(CF)	М
MHD GENERATOR (CF)	-
MHD/STEAM GEN(CF)	-
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	F
GAS TUPB GEN(NF)	F
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	1 2
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	4 4 F 8 8 3 7
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	F
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	F
BATTERY STORAGE	М

F. S. C.

REGUIREMENT: 50 KM 1 HR

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S GE!	ENG!	Z	NEN	ENE	TEA	ONIC	TUR	VAP TURB GEN (NF)	TOPE	9 9		TURE	TUR	TURE	FLYWHEEL STORAGEIG	
GAS TURB GEN - SC(CF) 16	DIESEL GENERATOR (CF) !A SPARK IGN ENG GEN (CF) !A PUEL CELL - PHOS ACID (CF) : 949	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)!	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF) 1996 GAS TURB GEN (NF) 1 A)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR) : 8988	WIND TURB GEN 10-11D	WIND TURB GEN 10-SID	WIND TURN GEN 20-110	5	
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'50 KW 1 Hr.

PARAMETER

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN .ENG GEN (CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	5 7 16 5 7 16 0 8 7 16
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	Not modular
GAS TURB GEN (NF)	Not modular
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	840
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully modular

The tabulated conditions exist in the power system to the extent indicated.

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GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	-	-		
GAS TURB GEN - RC (CF)											- Con
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	_	_		
SPARK IGN ENG GEN(CF)	•	0	0	_	0	0	•	_	_	0	- Con
FUEL CELL - PHOS ACID(CF)	-	-	-	-	0	-		-	_		suf
STEAM TURB GEN - COAL(CF)							1000				as eff
STEAM TURB GEN - OIL (CF)											per
STIRLING ENG GEN(CF)	0	0	0		0	0		-	-		rel
MHD GENERATOR (CF)						Ť	II.			•	- Con
MHD/STEAM GEN(CF)											and suf
THERMIONIC GEN(CF)	0	•	-	-		0	0	-	-		a m
STEAM TURB GEN(NF)							100				on
ORGANIC VAP TURB GEN(NF)	0	0	0	0	_	0					
GAS TURB GEN(NF)		0	0	0	_			-		•	- Con
RADIOISOTOPE GEN(NF)				5			1.00		100		fac
STEAM TURB GEN (SOLAR)	1	76					8.0				ing
ORGANIC VAP TURB (SOLAR)	0	0	0	-	_	0	S				3 8
GAS TURB GEN (SOLAR)	0	0	0	- 3	0	0					¥ 3
PHOTOVOLTAIC (SOLAR)	-	0		-	0	-	2		0: 50		7 6
WIND TURB GEN 10-1	0		•	-	0	_	-			Ğ	
WIND TURB GEN 10-5	0	0	•		0	_					
WIND TURB GEN 20-1	0	0		-	0	-	-	-	•		
WIND TURB GEN 20-5	0	0	•		0	-				33) 70 70	
FLYWHEEL STORAGE	0	-		-	_	-	0	-			
	10	A COLUMN		_	_		10		-		

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

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PARAMETER: 15 MAINT AND OPER

KW 1 HR

REGUIREMENT: 50

#IND TURB GEN 20-11D

#IND TURB GEN 20-11D

#IND TURB GEN 20-51D

#IND TURB GEN 20-11D

#IND TURB GEN 20-51D

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GAS TURB GEN - SCICF) 1981	GAS TURB GEN - RC(CF)! DIESEL GENERATOR (CF)!	FUEL CELL - PHOS ACIO (CF):		दे - = -	MHD/STEAM GEN (CF)! THERMIONIC GEN (CF)!	- = :	ORGANIC VAP TURB GEN (NF) : 086		=	ORGANIC VAP TURB GEN (SOLAR) 1988 GAS TURB GEN (SOLAR) 1988	- : :			- ·	36.1	- = -	
000	GAS TURB GEN - RC(CF) DIESEL GENERATOR (CF) PARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACIO (CF) STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF) I	MHD GENERATOR (CF)	MHO/STEAM GEN (CF)	STEAM TURB GEN (NF)	2 2	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	SOLA	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-1	WIND TURB GEN 10-5	WIND TURB GEN 20-1	FLYWHEEL STORAGE!	BATTERY STORAGE!	Z.J
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PARAMETER

50 KW 1 Hr.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID (CF)	Platinum
STEAM TURB GEN - COAL (CF)	Platinum
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	Wana
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	Notice
ORGANIC VAP TURB GEN(NF)	None
GAS TURB GEN (NF)	
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	None
	Possibly lead for conventional batteries

SECTION XIII

TEN KILOWATT, CONTINUOUS DC

REQUIREMENT

Power Level:

10 Kw

Operating Mode:

Continuous

Frequency/Phase:

DC

Voltage Level:

28 V

REQUIREMENT: 10 KW CONT DC-28V

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7	A) 77 B) 85 C) 90			A) 77 B) B0 C) B5									********	5000000E+0	**********		***************************************	V800000	A 60 60 60 60 60 60 60 60 60 60 60 60 60	A) 77 B) B5	177 8) 85 1080A	58 (8	
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0.	GAS TURB GEN - SCICF) IG	DIESEL GENERATOR (CF) IA SPARK IGN ENG GEN (CF) IA	FUEL CELL - PHOS ACID (CF) 16	STEAM TURB GEN - COAL (CF)!	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) IA	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)!	THERMIONIC GEN (CF) 1886	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF) 1986	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR)! 2004101010101010101010101010101010101010	GAS TURB GEN (SOLAR) 100	PHOTOVOLTAIC (SOLAR) 1000	WIND TURB GEN 10-1100	WIND TURB GEN 10-5100	WIND TURB GEN 20-11000	WIND TURB GEN 20-5140	FLYWHEEL STORAGE!	BATTERY STORAGE!

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GAS TURB GEN - SC(CF) 1000000000000000000000000000000000000	F) 1000000									
GAS TURB GEN - RC(CF)	161	11								
DIESEL GENERATOR (CF) 1A	Alica									
SPARK IGN ENG GEN (CF) IA	F) IA					•				
FUEL CELL - PHOS ACTO (CF) 1CD	F) 1CD									
STEAM TURB GEN - COAL (CF)	F) 1	1 A) 77 B) 80 C) 85								
STEAM TURB GEN - OIL (CF)										
STIRLING ENG GEN (CF) 100A	CF 9 186A									
MHD GENERATOR (CF)	(F) I									
MHD/STEAM GEN (CF)	. i.									
THERMIONIC GEN (CF) : 00000000000000000000000000000000000	(F) 00000	***************************************	*******		V					
STEAM TURB GEN (NF)	1(4)			A) 40						

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ORGANIC VAP TURB GEN (NF)

GAS TURB GEN (NF)

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RADIOISOTOPE GEN (NF) imperancementation of the control of the con

GAS TURB GEN (SOLAR) IMPROVA I A)80 PHOTOVOLTAIC (SOLAR) IMCORMBORGEROSSOCIASSOCIASSOCIASSOCIAS A)77 8)85 C)95

MIND TURB GEN 10-119888A 1 A) 77 B) 85 WIND TURB GEN 10-5:0008884A 1 A) 77 B) 85

WIND TURB GEN 20-518888A 1 A) 77 B) 85

FLYWHEEL STORAGE!

WIND TURB GEN 20-1184

REGULAREMENT: 10 KW CONT DC-28V

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GAS TURB GEN - SC (CF) 10EA	P S S S S S S S S S S S S S S S S S S S
GAS TURB GEN - RC(CF)	
DIESEL GENERATOR (CF) 184	
SPARK IGN ENG GEN (CF) 1984	
FUEL CELL - PHOS ACID (CF) is	
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	在中国的政治的企业,可以一个人的,一个人的,也可以不是有关的,也可以是有关的,也可以是有关的,也可以是有关的,也可以是有一个人的,也可以是一个人的,也可以是一个人的,也可以是一个人的,也可以是一个人的,
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MHD GENERATOR (CF)	A 1 NO TO THE STATE OF THE PROPERTY OF THE PRO
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF) 1480000000000	**************************************
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ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	RADIOISOTOPE GEN (NF) I OTGETTE DE LE CONTROL DE LE CONTROL DE LE CONTROL DE LE CONTROL DE LA CONTRO
STEAM TURB GEN (SOLAR)	A) 77
ORGANIC VAP TURB GEN (SOLAR) I BESTERBERGES BESTERBERGE	Y
GAS TURB GEN (SOLAR) I BA	A) 80
PHOTOVOLTAIC (SOLAR)	PHOTOVOLTAIC (SOLAR) ICOOCCEBBGCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
WIND TURB GEN 10-119D	A) 77 B) 85 C) 95
WIND TURR GEN 10-51080A	I A) 77 8) 65 55 55 55 69 84 84 84 84 84 84 84 84 84 84 84 84 84
WIND TURB GEN 20-110	1 A) 77 B) 85
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2.5 3.0	A) 77 B) B5 C) 90							4			V	A) 90					A	V							
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	GAS TURB GEN - SCICF)	GAS TURB GEN - RCICE)	DIESEL GENERATOR (CF)	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACID (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF)	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-5	WIND TURB GEN 20-11	WIND TURB GEN 20-5	FLYWHEEL STORAGE	BATTERY STORAGE

BATTERY STORAGE!

PARAMETER: 44 VOLUME

	.0 .1 .2 .3 .4 .6 .7 .8 .9
GAS TURB GEN - SCICF)	GAS TURB GEN - SCICF) I CENTRE CENTRE CONTROL OF CONTRO
GAS TURB GEN - RCICF)	A) 77 B) B5 C) 90
DIESEL GENERATOR (CF) 10	
SPARK IGN ENG GEN (CF) IN	
FUEL CELL - PHOS ACID (CF)	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
STEAM TURB GEN - COAL (CF)	化二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十
STEAM TURB GEN - OIL (CF)	的一种种型的基础的最高的,可以可以使用的一种,可以可以使用的一种,可以可以使用的一种,可以可以使用的一种,可以可以使用的一种,可以可以使用的一种,可以可以使用的一种,可以可以使用的一种,可以可以使用的
STIRLING ENG GEN (CF) ! .	
MHD GENERATOR (CF)	为 TO
MHD/STEAM GEN (CF)	化聚亚基酚磺胺异苯酚 计操作设备 医加里氏征 医高性性炎 医有头脑炎 医克拉氏试验检检检检检检检检检检检检检检检检检检检检检检检检检检检检检检检检检检检检
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)	A. 技术等于出版的,是一个人,是一个人,是一个人,是一个人,也不是一个人,也不是一个人,也不是一个人,也不是一个人,也不是一个人,也不是一个人,也不是一个人,
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	计分类性 医克里氏 计记录 计记录 计记录 计可以 医多种性 医乳腺性 医乳腺性 医乳腺性 医乳腺性 医乳腺性 医乳腺性 医克里氏 医乳腺性 医乳腺素素 医乳腺素素 化二甲基甲基二甲基甲基二甲基甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基二
ORGANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	*************************************
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	4.男子の事を受罪
FLYWHEEL STORAGE	

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GAS TURB GEN - SCICF)											
GAS TURB GEN - RC(CF)											
DIESEL GENERATOR (CF)											
SPARK IGN ENG GEN (CF)											
FUEL CELL - PHOS ACTO (CF) 16	9	2010 0010 2210									
STEAM TURB GEN - COAL (CF)			0								
STEAM TURB GEN - OIL (CF)											
STIRLING ENG GEN (CF)											
MHD GENERATOR (CF)											
MHD/STEAM GEN (CF)											
THERMIONIC GEN (CF)											
STEAM TURB GEN (NF)											
ORGANIC VAP TURB GEN (NF)											
GAS TURB GEN (NF)											
RADIOISOTOPE GEN (NF) !											
STEAM TURB GEN (SOLAR)	11.14										
ORGANIC VAP TURB GEN (SOLAR) I GERTTEROTOROGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGO				!		*					
GAS TURB GEN (SOLAR) ! ! !		1			A) 80						
PHOTOVOLTAIC (SOLAR)	A) 80	1 A) 80 LAR) I 00000000000000000000000000000000000			2						
WIND TURB GEN 10-11			A) 7	A) 77 B) 85 C) 95	•	A					
WIND TURB GEN 10-5; ## # # # # # # # # # # # # # # # # #				i	(V	A) 77 B) 85	V				
WIND TURR GEN 20-11	20-1: GESCOSCOR	A-8-0				A) 77 B) 85	185				
MIND TUBB GEN 20-51	1 A) 77 B) 85	3) 85									
FLYWHEEL STORAGE!		A) 77 8) 85	2								
BATTERY STORAGE!											

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WIND TURB GEN 10-51

GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 20-51 FLYWHEEL STORAGE BATTERY STORAGE

WIND TURB GEN 20-11

KILOGRAMS X 10 3.5 4.0 4.5			Y = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 =	i	900000000000000000000000000000000000000			V-000000									
.0 .5 1.0 1.5	A177 R185 C190		V-1110000000000000000000000000000000000				(2) 日本山下の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の	V-000000000000000000000000000000000000	of being that the tenter payment of a								
	CE	(CF)	CE	CE	CF	(CF)	CE	3	CE	(CF)	(CF)	(NF)	(NF)	(NF)	(NF)	LARI	LARI
	GAS TURB GEN - SC(CF) !!	GAS TURB GEN - RC(CF)	DIESEL GENERATOR (CF) !	SPARK IGN ENG GEN (CF) !	FUEL CELL - PHOS ACTO (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) !	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURR GEN (NF)	PADIOISOTOPE GEN (NF) !	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR)

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REQUIREMENT: 10 KW CONT DC-28V

.0 .5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5	V2000000000000000000000000000000000000	A) // 6) 85 C) 90		***************************************								
KG PER YEAR 2.0 2.5	***************************************		•								V	96.04
.0 .5 1.0	GAS TURB GEN - SCICT): secretate contact and an analysis of the secretary		DIESEL GENERATOR (CF) PROPERTIES CONTRACTOR CONTRACTOR	SPARK IGN ENG GEN (CF) intertangeneral contraction of the contraction	FUEL CELL - PHOS ACID (CF) INDEPENDENCE CELL - PHOS ACID (CF)	A) 77 B) B0 C) B5		STIRLING ENG GEN (CF) 19999999999999999	6074		THERMIONIC GEN (CF) ISSESSESSESSESSESSESSESSESSESSESSESSESSE	
	SC (CF)	AC (CF)	R (CF)	N (CF)	0 (CF)	L (CF)	L (CF)	N (CF)	R (CF)	N (CF)	N (CF)	N (NF)
	GAS TURB GEN -	GAS TURB GEN - RC(CF)	DIESEL GENERATO	SPARK IGN ENG GE	FUEL CELL - PHOS ACTI	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GE	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GE	STEAM TURB GEN (NF)

ORGANIC VAP TURB GEN (NF)

GAS TURB GEN (NF)

PADIOISOTOPE GEN (NF)

STEAM TURB GEN (SOLAR)

ORGANIC VAP TURB GEN (SOLAR)

GAS TURB GEN (SOLAR)

PHOTOVOLTAIC (SOLAR)

WIND TURB GEN 10-51

WIND TURB GEN 20-11

WIND TURB GEN 20-5

WIND TURB BEN 10-1

FLYWHEEL STORAGE! BATTERY STORAGE!

WIND TURB GEN 20-51 FLYWHEEL STORAGE! BATTERY STORAGE!

REQUIREMENT: 10 KM CONT DC-28V

	.0 .1 .2 .3 .47 DOLLARS/YEAR X 10 .7 .8	6.
GAS TURB GEN - SCICE	GAS TURB GEN - SC (CF) PROPORTION OF THE CONTROL	• • • • • • • • • • • • • • • • • • •
GAS TURB GEN - RCICF)	A) 77 B) 85 C) 90	
DIESEL GENERATOR (CF	DIESEL GENERATOR (CF): 000000000000000000000000000000000000	
SPARK 16N ENG GEN (CF	SPARK IGN ENG GEN (CF) I PREPERENCE CONTROL CO	
FUEL CELL - PHOS ACTO (CF	(CF) I COUCCECCCCCCCCCCCCAB	
STEAM TURB GEN - COAL (CF	(CF) !	
STEAM TURB GEN - OIL (CF		
STIRLING ENG GEN (CF	(CF) D00000000000000000000000000000000000	
MHD GENERATOR (CF	(CF) I	
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF	A ************************************	
STEAM TURB GEN (NF)	96(7	
ORGANIC VAP TURB GEN INF		
GAS TURB GEN (NF)		
RADIOISOTOPE GEN (NF	以我们是不管理论的人,也是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个	
STEAM TURB GEN (SOLAR)		
ORGANIC VAP TURB GEN (SOLAR)		
GAS TURB GEN (SOLAR)		
PHOTOVOLTAIC (SOLAR)		
WIND TURB GEN 10-1		
WIND TURB GEN	1 1 1 1 1 1 1 1 1 1	
WIND TURB GEN	6-11 - 09 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 1 - 0 - 0	

10 KW Cont. DC-23V

PARAMETER

7) Environmental Constraints

- none

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The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(0,6)

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	40	"L'E	0	*C	\$0,	+ 50	+ 40	40	ري جي	3	4
GAS TURB GEN - SC (CF)	-	T-	0	6	1.				1_	T-	T-
GAS TURB GEN - RC (CF)											
DIESEL GENERATOR (CF)	1_		0	0						1_	
SPARK IGN ENG GEN(CF)	1-	1-	0	0	0	1	0	-			
FUEL CELL - PHOS ACID (CF)	1_		Ĭ	-	Ĭ	T	0	-		Ē	-
STEAM TURB GEN - COAL (CF)	1		T	1	1	T	1	1	Ť	+	F
STEAM TURB GEN - OIL (CF)	+						1-	1			-
STIRLING ENG GEN(CF)			0	0	1	t	1	1	+-	+	-
MHD GENERATOR (CF)	1	-	10	10	0		0	0	-	+	广
MHD/STEAM GEN(CF)	+		1	1	1	+-	+-	1	† -		\vdash
THERMIONIC GEN(CF)	+			1-	+	†-	-	+-	1		\vdash
STEAM TURB GEN(NF)	+	+	0	0	-	0	0	0	-	-	-
ORGANIC VAP TURB GEN(NF)	+	1-	+	+-	+	+	-	-	+-	+	-
GAS TURB GEN (NF)	+-	+		+	-	-	-	-	-	+-	+
RADIOISOTOPE GEN(NF)		\vdash	-	-		-		-	ALC:	-	-
STEAM TURB GEN (SOLAR)	+	+	+	-	-	-	-	-	-	十	+
ORGANIC VAP TURB (SOLAR)		-	-	+	1	-	-	-	-	-	+
GAS TURB GEN (SOLAR)	+	-	-	1	-	-	0	-	-	10	-
PHOTOVOLTAIC (SOLAR)	+	+	-	-	-	-	0	-	-	1	-
WIND TURB GEN (ALL)	-	-	-	1	-	-	-	-	-	-	-
FLYWHEEL STORAGE	-	-	1	-	-	-	+	-	-	-	-
BATTERY STORAGE	+	-	-	+	-	-	1-	-	-	-	-
BRITERI STORAGE	L	L		_	244	_	L	_	1_	1	

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10 KW Cont. DC-28V

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

O - minor limitation

• - major limitation

• - overriding limitation

SYSTEM	40	40	No.	£25	S	200	6 5	\$ 10 m
GAS TURB GEN - SC (CF)	-	_	0		-	-	-	-
GAS TURB GEN - RC (CF)								
DIESEL GENERATOR (CF)	-	-	-		-		_	-
SPARK IGN ENG GEN(CF)	_						_	-
FUEL CELL - PHOS ACID (CF)	-	-	_				_	-
STEAM TURB GEN - COAL(CF)								
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN(CF)	I		0		-		_	-
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)						-		
THERMIONIC GEN(CF)	0	0	0					-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)	T							
GAS TURB GEN(NF)				T				
RADIOISOTOPE GEN(NF)	-	I	-					
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB (SOLAR)		-	0	-		_	-	-
GAS TURB GEN (SOLAR)	-	-	0	-		-	1-	-
PHOTOVOLTAIC (SOLAR)	T		-	-		-	120	-
WIND TURB GEN 10-1	-			-	-		-	
WIND TURB GEN 10-5	-	-		-			1_	
WIND TURB GEN 20-1		1	-	-	-		-	-
WIND TURB GEN 20-5	-	1_	-		1_	•	1	Ī
FLYWHEEL STORAGE				1	T		1	
BATTERY STORAGE	1	1	-	1	1	1	1	1
	1-	-	-		4	1	1	1

10 KW Cont. DC-28V

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major

BATTERY STORAGE

Dendence of on canality line to the constitution Le Lo Late Load Limitations.

Part rependence on scharing of the contract of Reliciones reduction. Lave te da changes effect on system performance SYSTEM GAS TURB GEN - SC (CF) 0 0 0 0 GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) 0 0 0 SPARK IGN ENG GEN(CF) 0 0 0 0 FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN(CF) 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN(NF) RADIOISOTOPE GEN(NF) 0 0 0 STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) 0 GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE

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GAS TURB GEN - SC (CF) GOODOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO		A) 77 8185 C) 90	(CF) :	V-5000000000000000000000000000000000000					A) 85	i (a)		ONC) I			***************************************			***************************************	***************************************		98181335135513535135135135135135135135135135	77. (A	77. (A	A) 77 B) 85	BATTERY STORAGE
	(CF) BBBBB	- 6	_	-	CF) 00000	1(4)	160	CF) 10000	-6	- 6	CF) 1 00000	NF) I	NE)	NF) I	_	AR) I	i	i	AR) [0-110000	0-51 00000	10-11 00000		AGE !	

10 KW Cont . DC-28V

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system
F - fixed system

System	Туре
GAS TURB GEN - SC (CF)	М
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	М
SPARK IGN ENG GEN(CF)	M
FUEL CELL - PHOS ACID(CF)	M
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	M
MHD GENERATOR (CF)	_
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	-
ORGANIC VAP TURB GEN(NF)	<u>-</u>
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	T
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	r r
WIND TURB GEN 20-5	P
FLYWHEEL STORAGE	
BATTERY STORAGE	

REQUIREMENT: 10 KW CONT DC-28V

PARAMETER

10 KW Cont. DC-28V

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	1. No. 10. No.
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN (CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL(CF)	8. 1 2 2 3 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	18010F0 H
GAS TURB GEN (NF)	Shiften shi
RADIOISOTOPE GEN (NF)	Not modular
STEAM TURB GEN (SOLAR)	The state of the s
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWIEEL STORAGE	
BATTERY STORAGE	

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14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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SYSTEM	ADP.	Air.	S. A. D.	4170	500	The	405	50	With	
GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	-	_	
GAS TURB GEN - RC (CF)										
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•		-	^
SPARK IGN ENG GEN(CF)	•	0	0		0	0	•	-	-	0
FUEL CELL - PHOS ACID (CF)	-		-	_	0	-	_	_	-	
STEAM TURB GEN - COAL (CF)										
STEAM TURB GEN - OIL (CF)										
STIRLING ENG GEN(CF)	0	0	0	-	0	0	•	_	-	
MHD GENERATOR (CF)										•
MHD/STEAM GEN(CF)	L									
THERMIONIC GEN(CF)	0	•	-	-	•	0	0	_	-	
STEAM TURB GEN(NF)										
ORGANIC VAP TURB GEN(NF)										
GAS TURB GEN(NF)				91						
RADIOISOTOPE GEN(NF)	0	0	0	0		0		-	-	
STEAM TURB GEN (SOLAR)										
ORGANIC VAP TURB (SOLAR)	0	0	0	-	_	0	-	•	-	2.0
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	_	•	-	
PHOTOVOLTAIC (SOLAR)	-	0	-	-	0	-	-	•	-	100
WIND TURB GEN 10-1	0	0	•	-	0	-	-	-	•	
WIND TURB GEN 10-5	0	0	•	-	0	-	-	-	•	The state of
WIND TURB GEN 20-1	0	0	•	-	0	-	-	-	•	
WIND TURB GEN 20-5	0	0	•	-	0	-	-	-	•	
FLYWHEEL STORAGE										
BATTERY STORAGE								1		

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

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REQUIREMENT: 10 KW CONT DC-28V

•	.1 .2 .3 .4 .5 .6 .6 .7 .8 .9
GAS TURB GEN - SCICF) I BERE	900000000000000000000000000000000000000
GAS TURB GEN - RC(CF)	A177 6183 C190
DIESEL GENERATOR (CF) 194941	************
SPARK IGN ENG GEN (CF) : DOCO	***************************************
FUEL CELL - PHOS ACID (CF) 18	
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF) : BROOF	A00000000
MHD GENERATOR (CF)	AND THE GREAT AND THE STATE OF
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF) :	***************************************
STEAM TURB GEN (NF)!	A190
ORGANIC VAP TURB GEN (NF)!	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF) I BEBER	
STEAM TURR GEN (SOLAR)!	
ORGANIC VAP TURB GEN (SOLAR) I BORGE	. 405000005-05
GAS TURB GEN (SOLAR) ! POPE	V
PHOTOVOLTAIC (SOLAR) !	
WIND TURB GEN 10-1180	7
I A) TY GEN 10-5140	
MIND TURB GEN 20-1140	300
1 A) 71 MIND TURB GEN 20-5:00	
FLYWHEEL STORAGE!	7 8185
BATTERY STORAGE!	の一般の一般の一般の一般の一般の一般の一般の一般の一般の一般の一般の一般の一般の

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REM
REQUIREMENT :

	.0 .25 .5 .75 1.0 1.25 1.5 1.75 2.0 2.25
GAS TURB GEN - SC (CF)	V
GAS TURB GEN - RC(CF)	A) 77 B) 85 C) 90
DIESEL GENERATOR (CF)	(CF) 00000000000000000000000000000000000
SPARK IGN ENG GEN (CF)	(CF) 1000000000000000000000000000000000000
FUEL CELL - PHOS ACID (CF)	
STEAM TURB GEN - COAL (CF)	A) 77 6189 C) 85
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF)	
MHD GENERATOR (CF)	19 19 19 19 19 19 19 19
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	# # # # # # # # # # # # # # # # # # #
STEAM TURB GEN (NF)	는 보이 되었다. 그런 보이 되었다. 그런 보이 되었다. 보이 되었다. 보이 보는 보이 되었다. 보이
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
REDIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR): ************************************
GAS TURB GEN (SOLAR) ! PREFECTED DECENTED A	A100000000000000
PHOTOVOLTAIC (SOLAR)	・ 一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、「一般のでは、
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	
FLYWHEEL STORAGE	
BATTERY STORAGE!	

10 KW Cont. DC-28V

PARAMETER

17) Availability of Raw Build-

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID (CF)	Platinum
STEAM TURB GEN - COAL (CF)	NA. 94
STEAM TURB GEN - OIL (CF)	201000 10000 NO. 22 Property Co. 1
STIRLING ENG GEN(CF)	Name of the state
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	W
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN(NF)	No
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	Possibly lead for conventional batteries Possibly lead for conventional batteries
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	

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SECTION XIV

TEN KILOWATT, CONTINUOUS 30

REQUIREMENT

Power Level: 10 Kw

Operating Mode: Continuous

Frequency/Phase: 60 Hz/30

Voltage Level: 240 V

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REGUIREMENT: 10 KW CONT 3P-240V

	.0 .1 .2 .3 .4 DOLLARS	x 10 .7 .8	0.
GAS TURB GEN - SC(CF) IG	16 A177 B185 C190		
DIESEL GENERATOR (CF) IA	りません		
SPARK IGN ENG GEN (CF) IA	A) 77		
FUEL CELL - PHOS ACTO (CF) 16	91		
STEAM TURB GEN - COAL (CF)			
STEAM TURB GEN - OIL (CF)	· · · · · · · · · · · · · · · · · · ·		
STIRLING ENG GEN (CF) IA	Comme		
MHD GENERATOR (CF)	Alesan elektrication in the figure of the ingles of the second alekan		
MHD/STEAM GEN (CF)			
THERMIONIC GEN (CF) 198		**************************************	
STEAM TURB GEN (NF)		A) 90	
ORGANIC VAP TURB GEN (NF)			
GAS TURB GEN (NF) I			
RADIOISOTOPE GEN (NF)	RADIOISOTOPE GEN (NF) : depression of the contradiction of the contradic		700000000000000000000000000000000000000
STEAM TURB GEN (SOLAR)!	A) .55000000E+07		11.0
BANIC VAP TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) I OFFERENCE CONTROLLES CON	V	
GAS TURB GEN (SOLAR) 100	1	A) 80	
PHOTOVOLTAIC (SOLAR)	I A) BO PHOTOVOLTAIC (SOLAR) I DECEMBERGE DESERVABLES DE SERVES DE	**************************************	
WIND TURB GEN 10-1188		A) 77 B) 85 C) 95	
WIND TURB GEN 10-51 CERECORDER	4)77 B)85		
WIND TURB GEN 20-1100D	000 A) 77 B) B5		
1 A) 77 B) 85 WIND TURB GEN 20-51 FIGURBRA	1 A) 77 B) 85		
FLYWHEEL STORAGE!	A) 77 8) 85 Walter Brown School		
BATTERY STORAGE!	,然后,我们就是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个		
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REQUIREMENT: 10 KW CONT 3P-240V

	•		S.	5.	1977	1977 DOLLARS	x 10 x 10 1.5	27.1	3.0
GAS TURB GEN - SCICF) 100000CB	TT (A. 1	95 0.9							
GAS TURB GEN - RCICF)									
DIESEL GENERATOR (CF) 1A	77.04								
SPARK IGN ENG GEN (CF) IA	A 16								
FUEL CELL - PHOS ACIO (CF) 1CD	93 1.	3010 0010							
STEAM TURB GEN - COAL (CF)		A111 8180 C183							
STEAM TURB GEN - OIL (CF)									
STIRLING ENG GEN (CF) 106A									
MHD GENERATOR (CF)	11								
MHD/STEAM GEN (CF)									
THERMIONIC GEN (CF) INTRODUCED CONTROLLED CO		***********			****				
STEAM TURB GEN (NF)				961¥					
ORGANIC VAP TURB GEN (NF)									
GAS TURB GEN (NF)									
RADIOISOTOPE GEN (NF) interpolation of the contract of the con	-	***********		*********	**********		***************************************	***************************************	
STEAM TURB GEN (SOLAR)	: ;	A) .11870000E+08							
ORGANIC VAP TURB GEN (SOLAR) I DESCRIPTION OF THE PROPERTY OF		**********		***************************************	***************************************		***************************************		*****
GAS TURB GEN (SOLAR) I DECEMBE								9814	
PHOTOVOLTAIC (SOLAR) Incrementation of the properties of the prope	A) 100000	***********			V				
WIND TURB GEN 10-11908A	-11 000BA			A) 7	A) 77 B) 85 C) 95	ş			
WIND TURB GEN 10-STORGEBOOM	510000000A	8) 65 16 A							
WIND TURB GEN 20-118A	-118A	69.62							
WIND TURB GEN 20-518888	510800A	8185							
FLYWHEEL STORAGE!	E! A) 7 B) 85	8) 82							
BATTERY STORAGE	136					The second second			

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3P-240V
CONT
10 KM
REQUIREMENT:

BATTERY STORAGE!

645 TURB GEN - SC(CP) REA 645 TURB GEN - RC(CP) 184 5 DIESE GENERATOR (CP) 184 5 PART TOR S 4CD (CP) 184 5 STEAN TURB GEN - CAL (CP) 185 5 STEAN TURB GEN - COL (CP) 185 5 STEAN TURB GEN (CP) 185 6 AS TURB GEN (CP) 186 6 AS TURB GEN (CP) 1		0	.25	5.	.75	1977 DOLLARS 1.0 1.25	x 10 5 1.5	1.75	2.0	2.25
T B180 C185 15 8180 C185 15 8185 17 8185 17 8185 17 8185 17 8185 17 8185	GAS TURB GEN - SCICF!		9) 85 () 90							
7	GAS TURB GEN - RCICF)									
7 B) 80 C) 85										
7 B180 C185 5	SPARK IGN ENG GEN (CF)	1								
559400006£06 4) 80 1777 18) 85 17 8) 85 17 8) 85	FUEL CELL - PHOS ACTO (CF)									
559400000E-06 -59400000E-06 -1980 -1980 -1985 -1985 -1985	STEAM TURB GEN - COAL (CF)		3180 0182							
\$59400006E-06 \$39400006E-06 \$180 \$177 \$180 \$177 8185 \$18185 \$17 8185 \$17 8185	STEAM TURB GEN - OIL (CF)									
59400006+06 -59400006+06 -1800 -18	STIRLING ENG GEN (CF)									
A) 77 B) 85 T B) 85 C) 95 T B) 85 T B) 85 C) 95 T B) 85	MMD GENERATOR :CF	1 A) 85								
5940000E+06 -5940000E+06 -1300	MND/STEAM GEN (CF)									
4) 80 4) 80 4) 85 7 8) 85 7 8) 85	THERMIONIC GEN (CF)		******							
A) 77 A) 77 A) 77 A) 80 A) 80 A) 80 A) 77 B) 85 C) 95 T B) 85	STEAM TURB GEN (NF)	•								
A) 77 A) 80 T B) 85	ORGANIC VAP TURB GEN (NF)									
A) 77 S94000065-06 A) 80 A) 80 A) 77 B) 85 C) 95 7 B) 85 7 B) 85 7 B) 85 7 B) 85	GAS TURB GEN (NF)									
A) 30 (8) 85 7 8) 85 7 8) 85 7 8) 85	RADIOISOTOPE GEN (NF)		340000E+	90		***************************************				:
4) 80 10 17 8) 85 17 8) 85 17 8) 85	STEAM TURB GEN (SOLAR)									
7 8) 85 7 8) 85 7 8) 85	ORGANIC VAP TURB GEN (SOLAR)		***********	***************************************	•					
7 8) 85 7 8) 85 7 8) 85 7 8) 85	GAS TURB GEN (SOLAR)			080						
77 8) 85 77 8) 85 77 8) 85 77 8) 85	PHOTOVOLTAIC (SOLAR)		***************************************		********	Y				
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	WIND TURB GEN 10-1	- 1				8185 (195				
111	WIND TURB GEN 10-		3) 85							
1 1	WIND TURB GEN 20-1	11	30.85							
110	WIND TURB GEN 20-5	-	3) 65							
	FLYWHEEL STORAGE	A) 77	3) 85							

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LYWHEEL STORAGE!	BATTERY STORAGE!	ET AND THE WAR

REGUIREMENT: 10 KW CONT 3P-240V

	3.0 3.5
GAS TURB GEN - SCICF) 1000	
GAS TURB GEN - RCICF)	A) 77 B) B5 C) 90
DIESEL GENERATOR (CF)	
FUEL CELL - PHOS ACID (CF) 1000	7
STEAM TURB GEN - COAL (CF)	A) 77 B) 80 C) 85
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF) 1998	Y
MHD GENERATOR (CF)	
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF) : BES	
STEAM TURB GEN (NF)	- 1000년
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF) : 8884	¥ c c c c c c c c c c c c c c c c c c c
STEAM TURB GEN (SOLAR)!	
ORGANIC VAP TURB GEN (SOLAR) FORGE	V4400000000000000000000000000000000000
GAS TURB GEN (SOLAR) IBRO	
PHOTOVOLTAIC (SOLAR) 1888	***************************************
WIND TURB GEN 10-11808	
MIND TURB GEN 10-51888	200000000000000000000000000000000000000
WIND TURB GEN 20-11 BE	***************************************
WIND TURB GEN 20-51000	22.57
FLYWHEEL STORAGE	
ATTENY CTABLOS	

	•	7	.2	.0 .1 .2 .3 .4	CUBIC	CUBIC METERS	, x 10		è
GAS TURB GEN - SC(CF) (000000000000000000000000000000000000				A) 77 B) 85 C) 90	98 C) 58				
DIESEL GENERATOR (CF) i presentation of the second of the							77.14	1	
FUEL CELL - PHOS ACTO (CF)	-=					1000		77.04	
STEAM TURB GEN - COAL (CF)									
STEAM TURB GEN - OIL (CF)									
STIRLING ENG GEN (CF) I GOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGG	F) 000000		***************************************	*********	*******			1	
MHD GENERATOR (CF)							A) 85		
MHD/STEAM GEN (CF)									
THERMIONIC GEN (CF)									
STEAM TURB GEN (NF)									
ORGANIC VAP TURB GEN (NF)	-=								
GAS TURB GEN (NF)									
RADIOISOTOPE GEN (NF)									
STEAM TURB GEN (SOLAR)	- =								
ORGANIC VAP TURB GEN (SOLAR)	-=								
GAS TURB GEN (SOLAR)									
PHOTOVOLTAIC (SOLAR)									
WIND TURB GEN 10-1	-=								
WIND TURB GEN 10-5	. 15								
WIND TURB GEN 20-1	-=								
WIND TURB GEN 20-5	- 16								
FLYWHEEL STORAGE	- <u>.</u> .								

REQUIREMENT: 10 KM CONT 3P-240V

BATTERY STORAGE!

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REQUIREMENT: 10 KM CONT 3P-240V

	5. 0.	1.0	1.5	SQUARE 2.0	SQUARE METERS	x 10 3.0	3.5	•••
GAS TURB GEN - SCICE)								
GAS TURB GEN - RC(CF)								
DIESEL GENERATOR (CF)								
SPARK IGN ENG GEN (CF)								
FUEL CELL - PHOS ACID (CF) 16	9							
STEAM TURB GEN - COAL (CF)	4111 B180 C183							
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN (CF)								
MHD GENERATOR (CF)								
MHD/STEAM GEN (CF)								
THERMIONIC GEN (CF)								
STEAM TURB GEN (NF)								
ORGANIC VAP TURB GEN (NF)								
GAS TURB GEN (NF)								
RADIOISOTOPE GEN (NF) IA	*							
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB GEN (SOLAR)	GEN (SOLAR) I REPRESENTE DE PROPERTO DE PROPERTO DE PROPERTO DE LA COLOR DE PROPERTO DEPARTO DE PROPERTO DE PROPER	********	***************************************	1				
GAS TURB GEN (SOLAR) I BEEFFEEA			4/80					
PHOTOVOLTAIC (SOLAR) I DECEMBER DESCRIPTIONS			9					
AINO TURB GEN 10-11-01-01-01-01-01-01-01-01-01-01-01-0	***************************************	04444444444444444444444444444444444444	56(2)	**************************************				
AIND TURB GEN 10-51-0-5-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-	*************************	***************************************	***************************************	0000000	V0000			
WIND TURB GEN 20-11 PERFECTEBBA	A00000000			A) 77 8183		Sestan Birens		
MIND TURB GEN 20-5180000000000	000000000000000000000000000000000000000	1						
FLYWHEEL STORAGE								
BATTERY STORAGE	The Park as get Date of the		· · · · · · · · · · · · · · · · · · ·	00 00 00 00 00 00 00 00 00 00 00 00 00				
	STATE OF STREET STREET			· · · · · · · · · · · · · · · · · · ·	And the second second			

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FLYWHEEL STORAGE! BATTERY STORAGE!

WIND TURB GEN 20-51

645 TURB GEN - SC(CF) 4,77 B) 65 C) 90 645 TURB GEN - RC(CF) 4,77 B) 65 C) 90 646 TURB GEN - COAL (CF) 4,77 B) 65 C) 90 647 TURB GEN - COAL (CF) 4,78 B) 65 C) 90 648 TURB GEN - COAL (CF) 4,8 B) 90 649 TURB GEN - COAL (CF) 4,8 B) 90 640 TURB G	••	-		s.	1.0	1.5	KILOGRAMS 2.0	2.5	3.0 × 10	3.5	•••	4.5
DIESEL GENERATOR (CF) ************************************	GAS TURB GEN - SC (CF)			177 818	96(2 9							
SPARK IGN ENG GEN (CF) ***********************************	5				********	•			•			
A) 77 8) 80 C) A) 7300000E+04 A) -7300000E+04 A) -73000000E+04 A) -730000000E+04 A) -73000000E+04 A) -73000000E+04 A) -730000000E+04 A) -73000000E+04 A) -730000000E+04 A) -73000000E+04 A) -730000000E+04 A) -730000000E+04 A) -7300000000E+04 A) -73000000000000000000000000000000000000	60			******	********	•	***********		V			
A) .7300000E+04	(F)		********	*****	********	•		***************************************				9000
A) 85	STEAM TURB GEN - COAL (CF)	==:										
MHD GENERATOR (CF) MHD GENERATOR (CF) THERMIONIC GEN (CF): STEAM TURB GEN (NF): GAS TURB GEN (NF): VAP TURB GEN (SOLAR): VAP TURB GEN (SOLAR): GAS TURB GEN (SOLAR): MIC VAR TURB GEN (SOLAR):	STEAM TURB GEN - OIL (CF)	-										
A) .7300000E+04	5	- 6	********		*********		A					
F)	2	MHD GENERATOR (CF)				A) 85						
F) F) F) F) F) F) F) F)	=	MHD/STEAM GEN (CF)										
F): F): A) .7300000E+04 A): A) .7300000E+04 A): A) .7300000E+04 A):	2	THERMIONIC GEN (CF)										
F) P) P) P) P) P) P) P)	=	STEAM TURB GEN (NF)										
F)	=	ORGANIC VAP TURB GEN (NF)!										
A) : 7300000E+04 R) I	5	GAS TURB GEN (NF)										
	Z	Ē.	*******	***	********	*********	*********	*********	**************			
	5	STEAM TURB GEN (SOLAR)!										2
	3	5										
	5	GAS TURB GEN (SOLAR)										
	3	PHOTOVOLTAIC (SOLAR)!										
	9	WIND TURB GEN 10-11										
	2	WIND TURB GEN 20-11										

REQUIREMENT: 10 KW CONT 3P-240V

	•	.0 .5 1.0	-		1.5	2.0 PE	KG PER YEAR 2.0 2.5	3.0 10	01	3.5	•:•	•
GAS TURB GEN - SCICE							- SC (CF) : 0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0					
GAS TURB GEN - RCICE)	-=								•	A) 77 8) 85 C) 90	966	
DIESEL GENERATOR (CF): 1000000000000000000000000000000000000				11.7								
SPARK IGN ENG GEN (CF		***************************************					V35000000000000000000000000000000000000	V				
FUEL CELL - PHOS ACID (CF) 1000000000000000000000000000000000000		***************************************		000000000000000000000000000000000000000								
STEAM TURB GEN - COAL (CF)	-=				<u>c</u>							
STEAM TURB GEN - OIL (CF)	-=											
STIRLING ENG GEN (CF) INTOGETEROFFEEGA		-		4								
MND GENERATOR (CF)	-=	A) 85										
MMD/STEAM GEN (CF)	-=											
THERMIONIC GEN (CF) LOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC		*********	•				****					
STEAM TURB GEN (NF)	-=					06 (¥						
ORGANIC VAP TURB GEN (NF)	-=											
GAS TURB GEN (NF)	-=											
RADIOISOTOPE GEN (NF)	-=											
STEAM TURB GEN (SOLAR)												
ORGANIC VAP TURB GEN (SOLAR)	-=											
GAS TURB GEN (SOLAR)												
PHOTOVOLTAIC (SOLAR)												
WIND TURB GEN 10-1	-=:											
WIND TURB GEN 10-5	- <u>1</u>											
WIND TURB GEN 20-11	-=											
WIND TURB GEN 20-51	- ŵ.											
FLYWHEEL STORAGE												
BATTERY STORAGE	- <u></u> -									-		

REQUIREMENT: 10 KW CONT 3P-240V

.0 .1 .2 .3 .4 .5 .6 .6	GAS TURB GEN - SC(CF):	00000000A	SPARK IGN ENG GEN (CF) TORGETHOUSE CONTROL OF CONTROL O	,	A) // 8) 80 C) 85			5		THERMIONIC GEN (CF) I GROUPE GROUP G	96(4												
1. 0.	GAS TURB GEN - SC(CF) I GOODE	DIESEL GENERATOR (CF): sessessessessessesses	SPARK IGN ENG GEN (CF) DECRESSEES	FUEL CELL - PHOS ACID (CF) DECORREGED COCCOGGO AND COLOR	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)!	STIRLING ENG GEN (CF) INTERESCENCES	MHD GENERATOR (CF)!	MHD/STEAM GEN (CF)!	THERMIONIC GEN (CF) I CONDECTED	STEAM TURB GEN (NF)!	ORGANIC VAP TURB GEN (NF.)	GAS TURB GEN (NF.)	PADIOISOTOPE GEN (NF.)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	

10 KW Cont. 3P-240V

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(0) (0)

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	4ºCo	4us	, ⁶ 0	*	\$0.	+ 50	+ 40	A 40	× 50	8	43
GAS TURB GEN - SC (CF)	1-	T-	0	0	1.				-	L	
GAS TURB GEN - RC (CF)			1	Ť	Ť	Ť		ľ			
DIESEL GENERATOR (CF)	1-	1-	0	0					-	1-	1_
SPARK IGN ENG GEN(CF)	1-	1-	0	0		-		-	1_	1-	1_
FUEL CELL - PHOS ACID (CF)	1-	1-	-	-	1-	-	0	T-	1-	-	-
STEAM TURB GEN - COAL(CF)											
STEAM TURB GEN - OIL (CF)											
STIRLING ENG GEN(CF)	1-	-	0	0					-	1-	1_
MHD GENERATOR (CF)			1	1	1	1	1	1			
MHD/STEAM GEN(CF)		T	T -	1		† -	T		1	† -	1
THEREIONIC GEN(CF)	T_	T_	0	0			0	10	†_	1.	T -
STEAM TURB GEN(NF)	1		1	1	1	1	1	1	Ť	T	Ť
ORGANIC VAP TURB GEN(NF)	1		i								1
GAS TURB GEN(NF)											†-
RADIOISOTOPE GEN(NF)	-	1	-	1-	1	-	-	1_		1	1
STEAM TURB GEN (SOLAR)	T		1				T	-	T	18	1
ORGANIC VAP TURB (SOLAR)	1		-	-	1			-		0	
GAS TURB GEN (SOLAR)	1	1-	1	t	F	F	0		1	1	-
PHOTOVOLTAIC (SOLAR)	+	1	-	1	1	-	0	-	F	Ē	-
WIND TURB GEN (ALL)	1	+	1	1	1	1	-	T	-	F	-
PLYMMEEL STORAGE	F	+	+	F	-	-	-	-	F	f	-
MATTERY STORAGE	+	+	1	+	1	1	1	+	+	1	1
	_	-	-	_	27	-	_	_		_	

- - none

0 - minor

0 - moderate

• - major

10 KW Cont. 3P-240V

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation
0 - minor limitation
• major limitation
• overriding limitation

or to the state of the state of

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SYSTEM	40	40	10	40	500	A 5	\$ 15°	A A
GAS TURB GEN - SC (CF)	-	-	0		-	-	-	-
GAS TURB GEN - RC (CF)								
DIESEL GENERATOR (CF)	-	_	-		-	-	_	
SPARK IGN ENG GEN(CF)	-		-		-	-	-	
FUEL CELL - PHOS ACID (CF)	_		-		-	-	-	_
STEAM TURB GEN - COAL(CF)				Ť				
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN(CF)	-	-	0		-	-	_	_
MHD GENERATOR (CF)				1				
MHD/STEAM GEN(CF)				1				
THERMIONIC GEN(CF)	0	0	0					
STEAM TURB GEN(NF)		Ť	Ŭ			Ī		
ORGANIC VAP TURB GEN(NF)				1				
GAS TURB GEN(NF)				1				
RADIOISOTOPE GEN(NF)								
STEAM TURB GEN (SOLAR)				Ī	-	-		1
ORGANIC VAP TURB (SOLAR)			0					
GAS TURB GEN (SOLAR)	-	_	0					1
PHOTOVOLTAIC (SOLAR)	-	-	_					
WIND TURB GEN 10-1			1				-	-
WIND TURB GEN 10-5								-
WIND TURB GEN 20-1						-	-	-
WIND TURB GEN 20-5							-	-
FLYWHEEL STORAGE					-	-	-	-
BATTERY STORAGE			-	-			-	-
		-	-	-		1	1	1

10 KW Cont. 3P-240V

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

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3 32	67.	4	KU TON	
4 60	37 :	2,00		
5 5	Q	80.3	0'5	

Dependence Overload SYSTEM GAS TURB GEN - SC (CF) 0 GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) 0 SPARK IGN ENG GEN(CF) 0 0 0 0 FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN(CF) 0 0 0 0 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN (NF) RADIOISOTOPE GEN(NF) 0 0 0 0 0 STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) 0 0 GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE BATTERY STORAGE

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THE REAL PROPERTY.

REQUIREMENT: 10 KM CONT 3P-240V

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v.						***********		***************************************		A) 80 A) 77 B) 85 C) 95 A) 77 B) 85 C) 95
•	GAS TURB GEN - SC (CF) 1000000000000000000000000000000000000	DIESEL GENERATOR (CF): ####################################	STEAM TURB GEN - COAL (CF) I	STIRLING ENG GEN (CF) I	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) PORTION A 90 STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF)!	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR) INTERCEDENCE A) 80 GAS TURB GEN (SOLAR) INTERCEDENCE A) 80 PHOTOVOLTAIC (SOLAR) INTERCEDENCE A) 80 WIND TURB GEN 10-51 SEPTEMBER STREET STREE

10 kw Cont. 3P-240V

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	М
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	М
SPARK IGN ENG GEN(CF)	M
FUEL CELL - PHOS ACID(CF)	M
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	М
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	-7
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	Т
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	F
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	
BATTERY STORAGE	

REQUIREMENT: 10 KW CONT 3P-240V

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4) 77 8) 80 C) 85 6000000000000000000000000000000000000	60000000E-02 60000000E-02 60000000E-02 60000000E-02 60000000E-02 60000000E-02 60000000E-02 60000000E-03			
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PARAMETER

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13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

	CITCICAL MACELIAIS
GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN (CF)	
THERMIONIC GEN(CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	Not modular
STEAM TURB GEN (SOLAR)	U.G
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	
BATTERY STORAGE	3 2 5

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PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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GAS TURB GEN - SC (CF)	0		0	-		0		-	_		- Cond
GAS TURB GEN - RC (CF)			Si di								exis
DIESEL GENERATOR (CF)		0	0	-	0	0	•	T -		_	
SPARK IGN ENG GEN(CF)	•	0	0	-	0	0		-	_	0	- Cond
FUEL CELL - PHOS ACID (CF)	-	-	-	-	0	-		-	_		suff
STEAM TURB GEN - COAL (CF)											as t
STEAM TURB GEN - OIL (CF)											peri
STIRLING ENG GEN(CF)	0	0	0	-	0	0					reli
MHD GENERATOR (CF)					-	-				•	- Cond
MHD/STEAM GEN(CF)											and suff
THERMIONIC GEN(CF)	0		-	-		0	0				a mo
STEAM TURB GEN(NF)		1			1		-				on s
ORGANIC VAP TURB GEN(NF)							1				41.00
GAS TURB GEN(NF)							(A)			•	- Cond
RADIOISOTOPE GEN(NF)	0	0	0	0	-	0					fact
STEAM TURB GEN (SOLAR)	-	-	Ů	۳	-	1		广			ing
ORGANIC VAP TURB (SOLAR)	0	0	0			0					ance
GAS TURB GEN (SOLAR)	0	0	0		-		-	•	-		
PHOTOVOLTAIC (SOLAR)	-	0	0	-	0	0	100	•	-		
WIND TURB GEN 10-1	-			-	0	-	-	•			
WIND TURB GEN 10-5	0	0	•	-	0	1	-	-	•		
WIND TURB GEN 20-1	0	0	•	-	0	-	-	=	•		
WIND TURB GEN 20-5	0	0	•	-	0	=	-	-	•		
FLYWHEEL STORAGE	0	0	•	=	0	-	-	-	•		
BATTERY STORAGE	-	-			_		_	_			

NAME OF THE PARTY OF THE PARTY

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists
 and is a governing
 factor in determin ing system perform ance and reliability

LIND AFN JARTIES	A) 77 B) 85 C190 A) 77 A) 77 A) 77 A) 77 A) 80 0000E+05 A) 80 C000E+05 S	MIND TIDE AFN 20-FIED	
1 4) 77 8) 85		WIND TURB GEN 20-1100	
WIND TURB GEN 20-1190		I A) 77 8) 85	
WIND TURB GEN 20-1100 1 A) 77 B) 85		AIND TURB GEN 10-51-07	
WIND TURB GEN 10-5180 WIND TURB GEN 20-1180 I A) 77 8) 85	600 HC 41(2)(1)(C) - 11(C)(C)(C) - 11(C)(C)(C)(C)(C)(C)(C)(C)(C)(C)(C)(C)(C)(# 100 CAN GEN 101 PAR	
WIND TURB GEN 10-5180 WIND TURB GEN 20-1180 WIND TURB GEN 20-1180	6000 HE - 41(2)에서 독대한 독대 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		
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A) 77 B) 85	60 NGC - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	**************************************	
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	A)77 B) 85 C190 A)77 A A)77 A A)77 A A)77 A A)90	•	
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	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) 77 A) 77 A) 77 A) 77 A) 77		
	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) 77 A) 77 A) 77 A) 77 A) 77	GAS TURB GEN (NF)!	
	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77	CAGARACIA AN TOTAL GEN (NT.)	
	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) 77 A) 77 A) 77 A) 77 A) 77		
	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) 77 A) 77 A) 77 A) 90	STEAM TURB GEN (NF) !	
	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) 77		
	A) 77 B) 85 C) 90		
	A) 77 B) 85 C) 90	MMD/STEAM GEN (CF)!	
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	A)77 B)85 C)90 A)77 B)85 C)90 A)77 A)77		
	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A		
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	a) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A A) 77	STEAM TURB GEN - OIL (CF)!	
	A) 77 B) 85 C) 90 A) 77 B) 85 C) 90 A) 77 A) A) 77		
	A) 77 B) 85 C) 90	STEAM TURB GEN - COAL (CE)	
	A) 77 B) 85 C) 90	FUEL CELL - PHOS ACID (CF) IE	
	A) 77 B) 85 C) 90		
	A) 77 B) 85 C) 90		
	.1 .2 .3 .4 .5		
	.1 .2 .3 .4 .5		
	.1 .2 .3 .4 .5	GAS TURB GEN - RC(CF) !	
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REQUIREMENT: 10 KM CONT 3P-240V

PARAMETER: 15 MAINT AND OPER

BATTERY STORAGE!

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PARAMETER: 16 OTHER ENERGY PROD

REQUIREMENT: 10 KW CONT 3P-240V

PARAMETER

10 KW Cont. 3P-240V

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID (CF)	Platinum
STEAM TURB GEN - COAL (CF)	Placifium
STEAM TURB GEN - OIL (CF)	1 1111
STIRLING ENG GEN(CF)	Wana
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	2 22
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	

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SECTION XV

TEN KILOWATT, CONTINUOUS 10

REQUIREMENT

Power Level:

10 Kw

Operating Mode:

Continuous

Frequency/Phase:

60 Hz/1Ø

Voltage Level:

240 V

Market ST WHITE

REQUIREMENT: 10 KW CONT 1P-240V

GAS TURB GEN (SOLAR) INTERPRED 1 A) 80 PHOTOVOLTAIC (SOLAR) INTERPREDENTATION OF THE PROPERTY OF THE PROPERTY

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	GEN - SCICF) 16	GEN - RCICF)	(CF)	ENG GEN (CF) IA	(CF)	(CF)	(CF)	CE	(CF)	CE	CE	(NF)	(NF)	(NF)	(NF)	GEN (SOLAR)
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	GAS TURB GEN	GAS TURB GEN	DIESEL GENERATOR (CF) IA	SPARK IGN ENG	FUEL CELL - PHOS ACID (CF) 16	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) IA	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE	STEAM TURB GEN

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BATTERY STORAGE		

WIND TURB GEN 20-51 0800A

WIND TURB GEN 20-1184

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FLYWHEEL STORAGE!

WIND TURB GEN 10-11000BA

RADIOISOTOPE GEN (NF) interestrational and the state of t

STEAM TURR GEN (NF)

ORGANIC VAP TURB GEN (NF)

GAS TURB GEN (NF)

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GAS TURB GEN (SOLAR) I A)80 1 A)80 PHOTOVOLTAIC (SOLAR) I GCRARBERTRESPERENTE STREET STREET A)77 B)85 C)95

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USAF TERRESTRIAL ENERGY STUDY. VOLUME III. PART I. SUMMARY DATA--ETC(U)
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REQUIREMENT: 10 KW CONT 1P-240V

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GAS TURB GEN - SC(CF) 10EA 1 A) 77 8) 85 C) 90		
DIESEL GENERATOR (CF) 18A		
THE CELL - PHOS ACIO (CF) 16		
STEAM TURB GEN - COAL (CF)!		
STEAM TURB GEN - OIL (CF)!		
STIRLING ENG GEN (CF) IA		
MMD GENERATOR (CF) !		
MHD/STEAM GEN (CF)!		
THERMIONIC GEN (CF) 10000000000		
STEAM TURB GEN (NF)		
ORGANIC VAP TURB GEN (NF)!		
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STEAM TURB GEN (SOLAR)!		4
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GAS TURB GEN (SOLAR) 18A		
PHOTOVOLTAIC (SOLAR) ICHIOTEBEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG		
WIND TURB GEN 10-1100		
WIND TURB GEN 10-51 BBBA		
WIND TURB GEN 20-110		
WIND TURB GEN 20-518A		
FLYWHEEL STORAGE!		
BATTERY STORAGE!		

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1P-240V
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REGUIREMENT:

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GAS TURB GEN - RC (CF)					A) 77 B) 85 C) 90	060			
DIESEL GENERATOR (CF) 10000000000000000000		• V							
SPARK IGN ENG GEN (CF) THE CORDER	4000 P								
FUEL CELL - PHOS ACID (CF) 1000000000000000000000000000000000000		***************************************		9					
STEAM TURB GEN - COAL (CF)			A) 77 B) B0 C) B5	0 0 85					
STEAM TURB GEN - OIL (CF)									
STIRLING ENG GEN (CF) : GEOGRAPHIC CONTROL CON		************			*				
MHD GENERATOR (CF)				A) 85					
MHD/STEAM GEN (CF)									
THERMIONIC GEN (CF	V00052000000000000000000000000000000000	*********	***************************************	•	***********	4			
STEAM TURR GEN (NF)	-:				A) 90				
ORGANIC VAP TURB GEN (NF)									
GAS TURB GEN (NF)	-=								
RADIOISOTOPE GEN (NF): 000000000000000000000000000000000000		***************************************	*************	¥ .					
STEAM TURB GEN (SOLAR)			A) 77						
ORGANIC VAP TURB GEN (SOLAR) I DEGREGORGES DEGREES CONTROLLES CONT		**********	***********			4			
GAS TURB GEN (SOLAR) I PROPRESSON CONTROL CONT		***********	***************************************		A) 80	۷.	4.000		
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IND TORE GEN ZU-III CONTRACTOR			A) 77 B) 85	0 8					
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FLYWHEEL STORAGE	<u>.</u> .		W183 B18	2 57.88					
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	GAS TURB GEN - RCICF)	- <u>.</u>			A) 77 B) 85 C) 90	06 () 50					
	DIESEL GENERATOR (CF) : OCCUPATION (CF) : OCCUPA	.F.) !	******	***************************************			***************************************		1		
	SPARK IGN ENG GEN (CF) PREPARENCE PROPERTY PROPER	(A)	*******							******	
	FUEL CELL - PHOS ACTO (CF)										
	STEAM TURB GEN - COAL (CF.	166									
	STEAM TURB GEN - OIL (CF.	S. Indiana									
	STIRLING ENG GEN (CF) : PRESENCE CONTROL CONTR	(F) 00000000					***************************************		1		
	MHD GENERATOR (CF.	-						A) 85			
	MHD/STEAM GEN (CF)	- - - -									
٠.	THERMIONIC GEN (CF)								,		
	STEAM TURB GEN INF										
	ORGANIC VAP TURB GEN (NF)										
	GAS TURB GEN (NF.										
	RADIOISOTOPE GEN (NF.)										
	STEAM TURB GEN (SOLAR)	- : :									
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	GAS TURB GEN (SOLAR)	R) i									
	PHOTOVOLTAIC (SOLAR)	- I (
	WIND TURB GEN 10-1	- T									
	WIND TURB GEN 10-5	. <u>.</u>									
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	WIND TURB GEN 20-51	- 5									
	FLYWHEEL STORAGE	196.1									

REGUIREMENT: 10 KW CONT 19-240V

645 TURB GEN - SC(CF) 55 PARK IGN ENG GEN (CF) 57 FUEL CELL - PHOS ACID (CF) 16 57 STEAN TURB GEN - COAL (CF) 1 57 STEAN TURB GEN - COAL (CF) 1 57 STEAN TURB GEN - COAL (CF) 1 MHO GENERATOR (CF) 1 MHO TURB GEN (CF) 1 MHO TURB GEN (SOLAR) 10-51		0	5.	1.0	1.5	SQUARE 2.0	SQUARE METERS	3.0 x 10	
645 TURB 6EN - RC(CF) SPARK 16N EWG 6EV (CF) STEAM TURB 6EN - COAL (CF) STEAM TURB 6EN - COAL (CF) STEAM TURB 6EN - COAL (CF) STEAM TURB 6EN (CF) WHOUSTEAM 6EV (CF) THERHOUT 6EV (CF) THERHOUT 6EV (CF) STEAM TURB 6EV (NF) AS TURB 6EV (NF) AS TURB 6EV (NF) AS TURB 6EV (SOLAR) ORGANIC VAP TURB 6EV (NF) AS TURB 6EV (SOLAR) AS TURB 6	GAS TURB GEN - SC (CF)								
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STIRLING ENG GEN (CF): MHD GENERATOR (CF): MHD/STEAM GEN (CF): THERHIONIC GEN (CF): STEAM TURB GEN (NF): GAS TURB GEN (NF): GAS TURB GEN (SOLAR): ORGANIC VAP TURB GEN (SOLAR): GAS TURB GEN (SOLAR): ORGANIC VAP TURB GEN (SOLAR): GAS TURB GEN (SOLAR): A) 77 B BS C) WIND TURB GEN 10-5: WIND TURB GEN 20-5: WIND TURB G									
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HHD/STEAM GEN (CF): STEAM TURB GEN (NF): GAS TURB GEN (NF): RADIDISOTOPE GEN (NF): A177 STEAM TURB GEN (SOLAR): GAS TURB GEN (SOLAR): A) 77 8) 85 WIND TURB GEN 20-51 GENERORGERERA A) 77 8) 85 FLYWHEEL STORAGE: GATTERY STORAGE: A) 77 8) 65									
THERMIONIC GEN (CF): STEAM TURB GEN (NF): GAS TURB GEN (NF): ABDIDISOTOPE GEN (NF): A177 STEAM TURB GEN (SOLAR): ORGANIC VAP TURB GEN (SOLAR): ORGANIC VAP TURB GEN (SOLAR): MIND TURB GEN 10-11000000000000000000000000000000000									
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GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) IA STEAM TURB GEN (SOLAR) I GROSSON IN	STEAM TURB GEN (NF)								
GAS TURR GEN (NF) I STEAM TURB GEN (SOLAR) A 177 STEAM TURB GEN (SOLAR) GONGO A 177 GAS TURB GEN (SOLAR) GONGO A 177 STEAM TURB GEN (SOLAR) GONGO A 177 STEAM TURB GEN (SOLAR) GONGO A 177 MIND TURB GEN 10-1 GONGO A 177 MIND TURB GEN 10-1 GONGO A 177 MIND TURB GEN 20-1 GONGO A 177 MIND TURB GEN 20-5 A 177 MIND TURB GEN 2	ORGANIC VAP TURB GEN (NF)								
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GAS TURB GEN (SOLAR) GENEGREGA A) 90000000000000000000000000000000000	STEAM TURB GEN (SOLAR)								
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PHOTOVOLTAIC (SOLAR) INTERPREDENCE CONTROL (SOLAR) INTERPREDENCE C	GAS TURB GEN (SOLAR)	V			A) 80				
MIND TURB GEN 10-11000000000000000000000000000000000	PHOTOVOLTAIC (SOLAR)	A) 80	******		998				
#IND TURB GEN 10-510000000000000000000000000000000000	WIND TURB GEN 10-1	***************************************	4)77 B)85	C) 95	A88888			
	WIND TURB GEN 10-5		*******		A) 7	8) 85	A		
WIND TURR GEN 20-51999999999999999999999999999999999999	WIND TURB GEN 20-1	***************************************	٧.			(A) 77 (B)	8		
	WIND TURB GEN 20-5		1800000						
BATTERY STORAGE!	FLYWHEEL STORAGE		616						
	BATTERY STORAGE								

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	IRLING ENG GEN (CF) ***********************************	GEN (CF) GEN (CF) GEN (NF) GEN (NF)											
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0.	GAS TURB GEN - SC (CF) I GOOD CONTROL CONTROL	GAS TURB GEN - RC(CF)!	DIESEL GENERATOR (CF) : GREEGESSESSESSESSESSES	SPARK IGN ENG GEN (CF) I STREEDERS	FUEL CELL - PHOS ACID (CF) 19989999999999999888	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) 1000000000000000000000000000000000000	MHD GENERATOR (CF) ! A) 85	MHD/STEAM GEN (CF)!	THERMIONIC GEN (CF) : GEGFORGERS	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF)!	RADIOISOTOPE GEN (NF)!	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR)!	GAS TURB GEN (SOLAR)!	PHOTOVOLTAIC (SOLAR) !	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-5!	FLYWHEEL STORAGE!	

10 KW Cont. 1P-240V

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SPARK IGN ENG GEN(CF)	-	1-	0	0	0	-		-	-	-	-
FUEL CELL - PHOS ACID (CF)	1-	-	1_	1-	-	1_	0	1-			
STEAM TURB GEN - COAL (CF)	1		-	+		1	1	1	-	Ī	Ē
STEAM TURB GEN - OIL (CF)	1			1		T	T				
STIRLING ENG GEN(CF)		1	1	1-	1	1	-	1		+	-
MHD GENERATOR (CF)	+	+	0	0	0	0	0	0	1	+	+
MHD/STEAM GEN(CF)	+		1	+	1	+	198	1			+
THERMIONIC GEN(CF)	+	1	1	+	-	1	+-	+	†-		+
STEAM TURB GEN(NF)	+	+-	0	0	-	0	0	0	-	1-	+
ORGANIC VAP TURB GEN(NF)	1							10.0			
GAS TURB GEN(NF)								in.		100	
RADIOISOTOPE GEN(NF)	_	-	-	-	_	-	-	-	-	-	-
STEAM TURB GEN (SOLAR)								100			3.7
ORGANIC VAP TURB (SOLAR)	-		-	1_	-	-	0	-		6	-
GAS TURB GEN (SOLAR)	1	İ.				-	0		E	1	Ē
PHOTOVOLTAIC (SOLAR)				-		1	-	-	1	F	-
WIND TURB GEN (ALL)	=	-	-	F	=	-				-	-
FLYWHEEL STORAGE	F	F	F	F	F	F	F	F	F	F	F
BATTERY STORAGE	+	-	-	-			1	-	-	-	1

- - none

0 - minor

0 - moderate

• - major

10 KW Cont. 1P-240V

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation

O - minor limitation

major limitationoverriding limitation

The state of the s

SYSTEM	40	40	et vo	E. E.	300	8	6 25 C	4
GAS TURB GEN - SC (CF)	-	-	0	•	-	-	-	-
GAS TURB GEN - RC (CF)								
DIESEL GENERATOR (CF)	-	-	-		_	-	_	_
SPARK IGN ENG GEN(CF)	-	-	_		_	_	_	-
FUEL CELL - PHOS ACID (CF)	-	-	_			_	_	-
STEAM TURB GEN - COAL(CF)								
STEAM TURB GEN - OIL(CF)		pa d						
STIRLING ENG GEN(CF)	-	-	0			_	_	-
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)							- 0	
THERMIONIC GEN(CF)	0	0	0		_			
STEAM TURB GEN(NF)				1	100			
ORGANIC VAP TURB GEN(NF)								
GAS TURB GEN(NF)								
RADIOISOTOPE GEN(NF)			-					
STEAM TURB GEN (SOLAR)				1				Ī
ORGANIC VAP TURB (SOLAR)	•		0					
GAS TURB GEN (SOLAR)	-	-	0	-				
PHOTOVOLTAIC (SOLAR)	-	-	1_	1		<u> </u>		
WIND TURB GEN 10-1		-						
WIND TURB GEN 10-5				E				
WIND TURB GEN 20-1		=			=			
WIND TURB GEN 20-5				E				Ī
FLYWHEEL STORAGE		-	-	-		•	F	1
BATTERY STORAGE	-	-	-	1		-	1	-

10 KW Cont. 1P-240V

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

et load te sport in the teduction to be lost the sport to be lost LE Load capability light at load capacity lig Pat reportence or solar insolar insola

Esticiated tadaction. SYSTEM GAS TURB GEN - SC (CF) GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) 0 0 0 0 0 SPARK IGN ENG GEN(CF) 0 0 0 FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN(CF) 0 0 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN(NF) RADIOISOTOPE GEN(NF) 0 0 0 0 0 STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) 0 0 GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE BATTERY STORAGE

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s. o.	1.0	1.5	EFFIC 2.0	EFFICIENCY PERCENT	ENT X 10	3.5	0	5.4	
******	100010010010000	A) 77 8)	B88999C B) 85 C) 90						
i			***************************************	***************************************	4				
SPARK IGN ENG GEN (CF): CERCECTROST	7	4	•	A) 77					
FUEL CELL - PHOS ACID (CF) 1000001989000000	2170400000000000000000000000000000000000	•	*******	***********		9040400000	1	3	
STEAM TURB GEN - COAL (CF) !								A) 77 B) B0 C) B5	No.
STEAM TURB GEN - OIL (CF)!									
STIRLING ENG GEN (CF) I DESPESSES		********		:				A	
MHD GENERATOR (CF)!							A) 85		
MHD/STEAM GEN (CF)!									
THERMIONIC GEN (CF) 1000000000000000000000000000000000000	***************************************	A	A8684						
STEAM TURB GEN (NF)!		A) 90							
ORGANIC VAP TURB GEN (NF) !									
GAS TURB GEN (NF) !									
PADIOISOTOPE GEN (NF) I GAGGGGGGGGG	***************************************		***************************************	***************************************					
STEAM TURB GEN (SOLAR)!				A) 7.7					
ORGANIC VAP TURB GEN (SOLAR): # # # # # # # # # # # # # # # # # # #		1							
PHOTOVOLTAIC (SOLAR) I PRESENTENTENTENTENTENTENTENTENTENTENTENTENTE	A) 80 G J95	į			45 fs				
•			***************************************	A) 77 B) B5	0				
WIND TURB GEN 20-11-040-04-04-04-04-04-04-04-04-04-04-04-04	***************************************				0				
WIND TURB GEN 20-51 ####################################	************			A) 77 8) 85	0				
FLYWHEEL STORAGE!									
BATTERY STORAGE!							etta		

The same of the property of

10 KW Cont 1P-240V

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	М
GAS TURB GEN - RC(CF)	
DIESEL GENERATOR (CF)	М
SPARK IGN ENG GEN(CF)	М
FUEL CELL - PHOS ACID(CF)	М
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL (CF)	-
STIRLING ENG GEN(CF)	М
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	_
THERMIONIC GEN(CF)	M
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	<u>-</u>
RADIOISOTOPE GEN(NF)	Т
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	P
WIND TURB GEN 20-1	P
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	
BATTERY STORAGE	

	GAS TURB GEN - SC (CF) 14G	GAS TURB GEN - RCICF)	DIESEL GENERATOR (CF) IA	SPARK IGN ENG GEN (CF) 14	FUEL CELL - PHOS ACID (CF) 1898	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) 10A	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF) 1940	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) 1 48	GAS TURB GEN (SOLAR) 1990	PHOTOVOLTAIC (SOLAR) 16	WIND TURB GEN 10-110	WIND TURB GEN 10-510	WIND TURB GEN 20-11D	WIND TURB GEN 20-510	FLYWHEEL STORAGE	BATTERY STORAGE
•	CF) 18		CF) !A	(F) !A	CF) !	- G	CF.	(F) !		CF) :	(6)	. (J)	 G		NF)		AR) :	AR)	AR) 16	0-110	0-210	0-110	0-210		AGE
v.		A177 B185 C190			***********				6014						48-48-48-48-48-48-48-48-48-48-48-48-48-4	1	.600000	.600000			: !	2 !			
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COLD																		:							
STAR																		2							
COLD START MINUTES						A) 77 B									-										
res 3.						8) 80 C) 85									I			•							
0 ×					,	82													-						
3.5																									
0.4																									
•																eed Eo		A 3 80							
																	0.0								

PARAMETER

10 KW Cont. 1P-240V

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN .ENG GEN (CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	The state of the s
STEAM TURB GEN - OIL(CF)	Tallette Light in the Charlette
STIRLING ENG GEN(CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	And the second s
GAS TURB GEN (NF)	1 Taria (1901)
RADIOISOTOPE GEN (NF)	Not modular
STEAM TURB GEN (SOLAR)	The state of the s
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWIEEL STORAGE	
BATTERY STORAGE	

10 KW Cont. 1P-240V

PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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SYSTEM	Aur	N'A	Air.	AIT,	Sog	The	POL	so	TA
GAS TURB GEN - SC (CF)	0	•	0	_		0	•		
GAS TURB GEN - RC (CF)									## T
DIESEL GENERATOR (CF)	•	0	0	,	0	0	•	-	
SPARK IGN ENG GEN(CF)	•	0	0	-	0	0	•	_	_
FUEL CELL - PHOS ACID(CF)	-	-	1	-	0	-	-		-
STEAM TURB GEN - COAL (CF)									
STEAM TURB GEN - OIL (CF)						(3m			
STIRLING ENG GEN(CF)	0	0	0	-	0	0	•	_	-
MHD GENERATOR (CF)									
MHD/STEAM GEN(CF)									
THERMIONIC GEN(CF)	0	•	-	-		0	0	_	_
STEAM TURB GEN(NF)									
ORGANIC VAP TURB GEN(NF)									
GAS TURB GEN(NF)				3(3)	II a	7			(3)
RADIOISOTOPE GEN(NF)	0	0	0	0	-	0	•	L	-
STEAM TURB GEN (SOLAR)						. 6.5			
ORGANIC VAP TURB (SOLAR)	0	0	0	-	_	0	12	•	-
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	_	•	-
PHOTOVOLTAIC (SOLAR)		0	-	-	0	-	-	•	-
WIND TURB GEN 10-1	0	0	•	-	0	-	-		•
WIND TURB GEN 10-5	0	0	•	-	0	-		-	•
WIND TURB GEN 20-1	0	0	•	-	0	-	-	-	•
WIND TURB GEN 20-5	0	0	•	-	0	-	-		
FLYWHEEL STORAGE									
BATTERY STORAGE									

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- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

REQUIREMENT: 10 KM CONT 1P-240V

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GAS TURB GEN - SC(CF) 10000	CICE				900000000000000000000000000000000000000	9					•
GAS TURB GEN - RC(CF)	C(CF)				A) 77 B) 85 C) 90	2 () 90					
DIESEL GENERATOR (CF) 19999	CE		V		4.0						
SPARK IGN ENG GEN (CF) 100001	(CF)			A) 77	¥2000000000000000000000000000000000000	٧					
FUEL CELL - PHOS ACTO (CF) IE	CF	:									
STEAM TURB GEN - COAL (CF)	CE	1 18180 0183	ō								
STEAM TURB GEN - OIL (CF)	(CF)										
STIRLING ENG GEN (CF) I BOOM	£ 5		v								
MHD GENERATOR (CF)	9	8) 85									
MHD/STEAM GEN (CF) !	G.										
THERMIONIC GEN (CF) 10000	(3)		•			Y 601 61 61 61 61 61 61 61 61 61 61 61 61 61	V				
STEAM TURB GEN (NF)!	(NF)					A190					
ORGANIC VAP TURB GEN (NF)	(NE										
GAS TURB GEN (NF)	(NE										
RADIOISOTOPE GEN (NF) I GREEN	(NF)			•							VIII.
STEAM TURB GEN (SOLAR)!	DLAR	•	32500000E+05	•							
ORGANIC VAP TURB GEN (SOLAR) I GOOR	OLAR)			***************************************		***************************************					V3000000000000000000000000000000000000
GAS TURB GEN (SOLAR) 10000	OLAR)		10000000000000000000000000000000000000		V						8
PHOTOVOLTAIC (SOLAR) 186861	DLAR		*******	A) 80			19190000000000000000000000000000000000				V
I A)			36700000E+05	6							A) 77 8) 85 C)
VIND TURB GEN 10-5160	10-51	1	8) 85								
WIND TURB GEN 20-1100	20-11	1	8) 82								
WIND TURB GEN 20-5180	20-51	11	8) 65								
FLYWHEEL STORAGE!	PAGE	11	8) 85								
BATTERY STORAGE!	DRAGE										

WIND TURB GEN 20-11 WIND TURB GEN 20-51 FLYWHEEL STORAGE! BATTERY STORAGE!

	•	52.	s.	57.	BTU/HOUR 1.0		x 10 1.5
A C 300 PF							
GAS TURB GEN - RC(CF)						20 60 60	
DIESEL GENERATOR (CF): ERSTEDENTESCENDENTS AND TANKEN A	i	***************************************	4				
SPARK IGN ENG GEN (CT) : 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•		********	**********	V		
FUEL CELL - PHOS ACID (CF) 1988998C889D	*****	00000					
STEAM TURB GEN - COAL (CF)		A) 77 8) 80 C) 85					
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN (CF) 1000000000		¥					
MHD GENERATOR (CF)	A 185						
MHD/STEAM GEN (CF)							
THERMIONIC GEN (CF) 1999999999999999999999999999999999999	*****	*********	********	V00000000			
STEAM TURB GEN (NF)				75 (H			
ORGANIC VAP TURB GEN (NF)							
GAS TURB GEN (NF)							
RADIOISOTOPE GEN (NF)							
STEAM TURB GEN (SOLAR)							
RGANIC VAP TURB GEN (SOLAR) I SERFESSESSESSESSESSESSESSESSESSESSESSESSESS		*********	********		M000		
GAS TURB GEN (SOLAR) : BERRESSESSESSES		**********	4 · ·	0			
PHOTOVOLTAIC (SOLAR)		996					
WIND TURB GEN 10-11	2080						
WIND TURB GEN 10-51							

ORGANIC VAP

2.25

2.0

1.75

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10 KW Cont. 1P-240 V

PARAMETER

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL (CF)	TEGETICAL TELEVISION OF THE PERSON OF THE PE
STEAM TURB GEN - OIL (CF)	Ten of an artist to the artist of the artist
STIRLING ENG GEN(CF)	None Ware
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	9
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	No.
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	
BATTERY STORAGE	

SECTION XVI

TEN KILOWATT, CONTINUOUS 10

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REQUIREMENT

Power Level: 10 Kw

Operating Mode: Continuous

Frequency/Phase: 60 Hz/10

Voltage Level: 120 V

- Marin Company

REQUIREMENT: 10 KW CONT 1P-120V

	.0 .1 .2 .3 .4 .5 .6 .7 .6 .9
GAS TURB GEN - SC(CF) 1G	F) 1G 1 A) 77 B) 85 C) 90
ALL SELECTION OF THE PARTY OF T	
SPARK IGN ENG GEN (CF) IA	1 40.77
FUEL CELL - PHOS ACIO (CF) 16	F) 16
STEAM TURB GEN - COAL (CF)!	I A) 77 8) 80 C) 85
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF) IA	100 200
MHD GENERATOR (CF) !	
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)!	
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF) I BE	
STEAM TURB GEN (SOLAR)!	3
ORBANIC VAP TURB GEN (SOLAR) I 998	
GAS TURB GEN (SOLAR) I ME	
PHOTOVOLTAIC (SOLAR) 1 48C	
WIND TURB GEN 10-1199	
WIND TURB GEN 10-51000	
WIND TURB GEN 20-11000	
WIND TURR GEN 20-51900	
FLYWHEEL STORAGE!	1 A) (1 B) 85 3E!
BATTERY STORAGE!	

1P-120V
CONT
10 KW
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BATTERY STORAGE!

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GAS TURB GEN - SC (CF) 1990	C (CF) 10000	######################################								
GAS TURB GEN - RC(CF)										
DIESEL GENERATOR (CF) IA	(CF) IA	2000 0000								
SPARK IGN ENG GEN (CF) IA	(CF) IA	7818 TO								
FUEL CELL - PHOS ACID (CF) 1CD	(CF) ico	777								
STEAM TURB GEN - COAL (CF)	(CF)									
STEAM TURB GEN - OIL (CF)	(CF)									
STIRLING ENG GEN (CF) 100A	(CF) I	State of the control of								
MHO GENERATOR (CF)	(CF) !	A) 85								
MHD/STEAM GEN (CF)	(65)									
THERMIONIC GEN (CF) : 60000	(CF)		***************************************	V	****	A CALBRETT BASE	The state of the s			
STEAM TURB GEN (NF)	(NF)									
ORGANIC VAP TURB GEN (NF)	(NF)									
GAS TURB GEN (NF)	(NF)									
RADIOISOTOPE GEN (NF) INTERES	(NF) 186		*********	•						VICTOR 1000000000000000000000000000000000000
STEAM TURB GEN (SOLAR)!	LARI	A) .11870000E-08	9							
ORGANIC VAP TURB GEN (SOLAR) I 00000	LAR) IO		***************************************	V0000000000000000000000000000000000000					¥	
GAS TURB GEN (SOLAR) I OUTO	LAR) 100	1						A) 80		
PHOTOVOLTAIC (SOLAR) INCOME	LAR! I OC	A) 80	***************************************	V 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Y					
WIND TURB GEN 10-11 0088A	10-11			17 (4	A) 77 8) 85 C) 95					
WIND TURB GEN 10-510000	10-51		79							
WIND TURB GEN 20-1184	20-11BA	11								
WIND TURB GEN 20-518888A	20-5108	13								
FI YWHEFT STORAGE	A I P	A) 77 8) 85								
AND THE PARTY OF BEING	100000000000000000000000000000000000000									

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REQUIREMENT: 10 KW CONT 1P-120V

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GAS TURB GEN - SC(CF) 10EA 1 A) 77 B) 65 C) 90 GAS TURB GEN - RC(CF) 1	A177 8185 C190
DIESEL GENERATOR (CF) 164	
SPARK IGN ENG GEN (CF) 1988	
FUEL CELL - PHUS ACTD (CF) 16	A177 DIAG CIAS THE SECRETARY SECRETA
STEAM TURB BEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG BEN (CF) IA	
MHD GENERATOR (CF) !	
MMD/STEAM GEN (CF) !	
THERMIONIC GEN (CF) 1980	
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)!	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF) 1000	
STEAM TURB GEN (SOLAR)!	00-3000000cc
ORGANIC VAP TURB GEN (SOLAR) 1000	Y0000000000000000000000000000000000000
GAS TURB GEN (SOLAR) 10A	
PHOTOVOLTAIC (SOLAR) ICOR	
	A) 77 B) 85 C) 95
	A177 8185
WIND TURB GEN 10-51988A	A) 77 B) 65
WIND TURB GEN 29-110	0 4)77 8)85
WIND TURB GEN 20-518A	80.4 A177 8185
FLYWHEEL STORAGE!	
BATTERY STORAGE!	

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	9E	GE	S	S	
	MIND TURB GEN 20-11-6-6-4-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-	4IND TURB GEN 20-5:44555446554464544645446464646464646464	FLYWHEEL STORAGE!	BATTERY STORAGE!	
	2	2	E	E	
¥.	9	9	5	8	
	=	=	- Pa		

	YEARS X 10 2.5 4.0
GAS TURB GEN - SC(CF)	OFO TOTAL GENERAL PROPERTY OF THE PROPERTY OF
GAS TURB GEN - RC(CF)	060 C808 L14
DIESEL GENERATOR (CF)	(CF): ####################################
SPARK IGN ENG GEN (CF)	(CF) 1=======
FUEL CELL - PHOS ACTO (CF)	
STEAM TURB GEN - COAL (CF)	A) 1. 0.00
STEAM TURB GEN - OIL (CF)	고객들은 전쟁 기계
STIRLING ENG GEN (CF)	(CF) : 010111111111111111111111111111111111
MHD GENERATOR (CF)	A) 85
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)	6. CA
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	4-00-000-00-00-00-00-00-00-00-00-00-00-0
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) I BELLEGERERERERERERERERERERERERERERERERERE
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	PHOTOVOLTAIC (SOLAR) I SEGRETARE TO THE TOTAL PROTOCOLOGO COLOR AND
	10-110000000000000000000000000000000000
IND TURB GEN	
SI YWHEEL STORAGE	A) 77 B) 85

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645 TURB GEN - SC(CF) ************************************		•		•	CUBIC METERS	1ERS .5	° × 9°	•
AS TURB GEN - RC(CF) AS A CF AS	GAS TURB GEN - SCICF			A) 77 B) B	9000 5 C) 90			
SPARK IGN ENG GEN (CF)	GAS TURB GEN - RCICE						***************************************	
A TURB GEN - COAL (CF) STIRLING ENG GEN (CF) WHO SERERATOR (CF) WHO SERERATOR (CF) WHO STEAN TURB GEN (CF) STEAN TURB GEN (KF) SADOISOTOPE GEN (KF) GAS TURB GEN (KF) STEAN TURB GEN (KF) STEAN TURB GEN (KF) WHO TURB GEN (SOLAR) WIND TURB GEN 10-5 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE BATTERY STORAGE	SPARK IGN ENG GEN (CF)						1) 77	
AN TURB GEN - COAL (CF) STIALING ENG GEN (CF) MHO/STEAM GEN (CF) MHO/STEAM GEN (CF) MHO/STEAM GEN (CF) STEAM TURB GEN (MF) GAS TURB GEN (MF) GAS TURB GEN (SOLAR) GAS TURB GEN (SOLAR) MIND TURB GEN 10-11 WIND TURB GEN 10-21 WIND TURB GEN 20-21	L CELL - PHOS ACTO (CF)							-
STIRLING ENG GEN (CF) WHO GENERATOR (CF) WHO/STEAM GEN (CF) THERMIONIC GEN (CF) STEAM TURB GEN (NF) GAS TURB GEN (NF) GAS TURB GEN (NF) GAS TURB GEN (SOLAR) WIND TURB GEN 10-11 WIND TURB GEN 10-21 WIND TURB GEN 20-21 WIND TURB GEN 20-21 WIND TURB GEN 20-21 WIND TURB GEN 20-21 WIND TURB GEN 20-51 FLYWHEEL STORAGE	IN TURB GEN - COAL (CF.							
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ANIC VAP TURB GEN (NF)! GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)! STEAM TURB GEN (SOLAR)! GAS TURB GEN (SOLAR)! GAS TURB GEN (SOLAR)! MIND TURB GEN 10-1! WIND TURB GEN 10-5! WIND TURB GEN 20-1! WIND TURB GEN 20-5! FLYWHEEL STORAGE! BATTERY STORAGE!	THERMIONIC GEN (CF.							
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GAS TURB GEN (NF)! STEAM TURB GEN (SOLAR)! C VAP TURB GEN (SOLAR)! GAS TURB GEN (SOLAR)! MIND TURB GEN 10-1! WIND TURB GEN 20-1! WIND TURB GEN 20-1! WIND TURB GEN 20-5! FLYWHEEL STORAGE!	GANIC VAP TURB GEN (NF)							
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C VAP TURB GEN (SOLAR); GAS TURB GEN (SOLAR); GAS TURB GEN (SOLAR); PHOTOVOLTAIC (SOLAR); WIND TURB GEN 10-1; WIND TURB GEN 20-1; WIND TURB GEN 20-1; WIND TURB GEN 20-5; FLYWHEEL STORAGE; BATTERY STORAGE;	RADIOISOTOPE GEN (NF)							
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GAS TURB GEN (SOLAR); WIND TURB GEN 10-1; WIND TURB GEN 20-1; WIND TURB GEN 20-1; WIND TURB GEN 20-5; FLYWHEEL STORAGE; BATTERY STORAGE;	IC VAP TURB GEN (SOLAR)							
WIND TURB GEN 10-11 WIND TURB GEN 10-51 WIND TURB GEN 20-11 WIND TURB GEN 20-51 FLYWHEEL STORAGE! BATTERY STORAGE!	GAS TURB GEN (SOLAR)	- - .						
WIND TURB GEN 10-11 WIND TURB GEN 20-11 WIND TURB GEN 20-11 FLYWHEEL STORAGE! BATTERY STORAGE!	PHOTOVOLTAIC (SOLAR)							
WIND TURB GEN 20-1: WIND TURB GEN 20-1: FLYWHEEL STORAGE: BATTERY STORAGE:	WIND TURB GEN 10-							
WIND TURB GEN 20-1: WIND TURB GEN 20-5: FLYWHEEL STORAGE: BATTERY STORAGE:	WIND TURB GEN 10-							
WIND TURB GEN 20-51 FLYWHEEL STORAGE! BATTERY STORAGE!	WIND TURB GEN 20-	-=-						
FLYWHEEL STORAGE! BATTERY STORAGE!	WIND TURB GEN 20-							
BATTERY STORAGE!	FLYWHEEL STORAGE							
	BATTERY STORAGE							

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FLYWHEEL STORAGE!

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GAS TURB GEN - SCICF)!			
GAS TURB GEN - RC(CF) !			
DIESEL GENERATOR (CF)!			
SPARK IGN ENG GEN (CF)!			
FUEL CELL - PHOS ACID (CF) 16			
STEAM TURB GEN - COAL (CF)!			
STEAM TURB GEN - OIL (CF)!			
STIRLING ENG GEN (CF)!			
MHD GENERATOR (CF) !			
MHD/STEAM GEN (CF) !			
THERMIONIC GEN (CF) !			
STEAM TURB GEN (NF)!			
ORGANIC VAP TURB GEN (NF) !			
GAS TURB GEN (NF) I			
RADIOISOTOPE GEN (NF) IA			
STEAM TURB GEN (SOLAR)!			
ORGANIC VAP TURB GEN (SOLAR) I BEBREGEREBREGEREBREGEREBREGEREBREGERE	A10000000		
GAS TURB GEN (SOLAR): 00000000A		TANKS TO SERVICE AND THE PARTY OF THE PARTY	
PHGTOVOLTAIC (SOLAR) ISSUED BEENEGEGEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	Ş		
MIND TURB GEN 10-11:000000000000000000000000000000000	44000000000000000000000000000000000000		
WIND TURB GEN 10-5: PERCENDENCE CONTROLL CONTROL	4160916091600000000000000000000000000000		
WIND TURB GEN 20-118488888A			

BATTERY STORAGE!

FLYWHEEL STORAGE

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.5 1.0	A) 77 B) 85 C) 90		***************************************	***************************************	**********			V0000000000000000000000000000000000000
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		- RC10	ATOR (C		ACTO (C			
	GAS TURB GEN - SCI	GAS TURB GEN - RC	DIESEL GENERA	SPARK IGN ENG GEN	FUEL CELL - PHOS ACID	STEAM TURB GEN - COAL	STEAM TURB GEN - OIL	STIRLING ENG GEN

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GANIC VAP TURB GEN (NF)! GAS TURB GEN (NF)!
GAS TURB GEN (NF) I

STEAM TURB GEN (SOLAR) ORGA

WIND TURB GEN 10-51 ORGANIC VAP TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 20-5 GAS TURB GEN (SOLAR) WIND TURB GEN 20-1

GAS TURB GEN - SC(CF): INTERPRETATION OF THE STATE OF THE	THE PERSON NAMED IN			C.U C.	1			
GAS TURB GEN - RC(CF)! DIESEL GENERATOR (CF): ###		********		*******		************		4
DIESEL GENERATOR (CF) 9984							A 1 1 8 1 8 2 1 9 0	26.0
SPARK IGN ENG GEN (CF) : 800	***********	*********	A					
	***********	**********	*********	**********	*********	A		
FUEL CELL - PHOS ACID (CF): 8488	(CF) : secretaria secretaria secretaria (CF)	0			A) 77			
STEAM TURB GEN - COAL (CF)!	4)7	A) 77 B) B0 C) B5	5					
STEAM TURB GEN - OIL (CF)!								
STIRLING ENG GEN (CF) 1998	(CF) : 448444444444444444444444444444444444	A						
MHD GENERATOR (CF) !	A) 85							
MHD/STEAM GEN (CF)!								
THERMIONIC GEN (CF) 1000	V 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	**********	***************************************	***********	A O			
STEAM TURB GEN (NF)!				A) 90				
ORGANIC VAP TURB GEN (NF)!								
GAS TURB GEN (NF)!								
RADIOISOTOPE GEN (NF) !								
STEAM TURB GEN (SOLAR)!								
ORGANIC VAP TURB GEN (SOLAR)!								
GAS TURB GEN (SOLAR)!								
PHOTOVOLTAIC (SOLAR)			Se Se					
WIND TURB GEN 10-11		6 到 4 表 5 生 基 4 4		5 30 01 00				
WIND TURB GEN 10-5!								
WIND TURB GEN 20-11								7171
WIND TURB GEN 20-51								
FLYWHEEL STORAGE!								
BATTERY STORAGE!								
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REQUIREMENT: 10 KM CONT 1P-120V

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GAS TURB GEN - SC(CF) I THE GEN - RC(CF) I	A) 77 B) 85 C) 90			
DIESEL GENERATOR (CF) : 00000000000000000000000000000000000				
SPARK IGN ENG GEN (CF) Interestance and an analysis and an ana				
FUEL CELL - PHOS ACID (CF): GOOGGOOGGOOGGOOGGAB				
STEAM TURB GEN - COAL (CF)!				
STEAM TURB GEN - OIL (CF)!				
STIRLING ENG GEN (CF) 1000000000000000000000000000000000000				
MHD GENERATOR (CF) !				
MHD/STEAM GEN (CF)!				
STEAM TURR GEN (NF)!				
ORGANIC VAP TURB GEN (NF)!				
GAS TURB GEN (NF)!				
RADIOISOTOPE GEN (NF) !				
STEAM TURB GEN (SOLAR)!				
ORGANIC VAP TURB GEN (SOLAR)!				
GAS TURB GEN (SOLAR)!				
PHOTOVOLTAIC (SOLAR)				
WIND TURB GEN 10-11				
#INO TURB GEN 10-51				
WIND TURB GEN 20-11				
WIND TURB GEN 20-51				
FLYWHEEL STORAGE!				
BATTERY STORAGE!				

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PARAMETER

7) Environmental Constraints

- none - minor - moderate - major

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(3,6)

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	15,0	4. Car	0	*C	\$0.	+ 50	4- 40	40	4 50	3	4
GAS TURB GEN - SC (CF)	1	T	1	T	Т	1	T		Г	Т	1
GAS TURB GEN - RC (CF)	十	+-	0	10	•				-	+-	+
DIESEL GENERATOR (CF)	+	-	0	0	-	-	-	-	-	+-	\vdash
SPARK IGN ENG GEN(CF)	+	1	1	1	8	8	8		+-	+	+-
FUEL CELL - PHOS ACID (CF)	+	+=	0	0	0	+=	0	+	+-	+-	+
STEAM TURB GEN - COAL(CF)	+-	-	+-	1=	+	+	0	+	-	+	+
STEAM TURB GEN - OIL (CF)	+	-		-	-	-	+		+	+	+
STIRLING ENG GEN(CF)	+	1	+	1-	+	+	-	1	-	+	+
MHD GENERATOR (CF)	+	一	0	0	0		0	0	=	+	+
MHD/STEAM GEN(CF)	+		-	+	-	\vdash	+	1	+-		+
THERMIONIC GEN(CF)	+-	1	+	+	+	+	+	+	+-		+
STEAM TURB GEN(NF)	+-	+	0	0		0	10	10	+	-	+
ORGANIC VAP TURB GEN(NF)	+	-	-	+-	+	+	+-	+	+	-	+-
GAS TURB GEN(NF)	+	+-	-	+	+	+	+	-	-	+	1
RADIOISOTOPE GEN(NF)	+	-	1	+		-	+	+	-	+	-
STEAM TURB GEN (SOLAR)	+-	+-	-	-	-	-	1	-	=	-	-
ORGANIC VAP TURB (SOLAR)	+	-	-	+	-		+	-	+	+	+
GAS TURB GEN (SOLAR)	+	•	-	=	-	-	0	-	-	0	-
PHOTOVOLTAIC (SOLAR)	+	-	-	+	1	-	0	-	-	-	-
WIND TURB GEN (ALL)	+	- 0	-0	-	-	-	-	-	-	-	-
FLYWHEEL STORAGE	-	-	-	+	-	-	-	+	-	-	-
BATTERY STORAGE	+	+-	-	=	-	-	-	-	-	-	-
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10 KW Cont. 1P-120V

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

O - minor limitation

e - major limitation

- overriding limitation

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SYSTEM	40	40	10	43	50	4 6	1,40	4
GAS TURB GEN - SC (CF)	_	_	0	•		-	-	_
GAS TURB GEN - RC (CF)								
DIESEL GENERATOR (CF)		-	-	•	-	-	-	-
SPARK IGN ENG GEN(CF)	-	-	-	•	-	-	-	-
FUEL CELL - PHOS ACID (CF)	_	-	-	•	-	-	-	_
STEAM TURB GEN - COAL(CF)								
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN(CF)	-	-	0	•	-	-	_	-
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)								
THERMIONIC GEN(CF)	0	0	0	•	-	-	-	-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)								
GAS TURB GEN(NF)								
RADIOISOTOPE GEN(NF)	-	-	1-	-	-	1-		-
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB (SOLAR)		-	0	-		-	-	-
GAS TURB GEN (SOLAR)	-	-	0	1-		-	-	-
PHOTOVOLTAIC (SOLAR)	-	-	1-	-		-	-	1-
WIND TURB GEN 10-1	-	1-	1-	-	-		-	-
WIND TURB GEN 10-5	1-	1-	1-	-	-		-	-
WIND TURB GEN 20-1	-	1	-	-	-		-	1-
WIND TURB GEN 20-5	1-	1-	-	-	-		-	-
FLYWHEEL STORAGE						1		
BATTERY STORAGE	1	1	1	1	1	1	1	1

10 KW Cont. 1P-120V

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

 - Characteristic not observed in system operation

O - Characteristic has minor effect on system performance

• - Characteristic has moderate effect on system performance

 Characteristic has major effect on system performance

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GAS TURB GEN - SC (CF)	0	0	-	-	0	0	0
GAS TURB GEN - RC (CF)							
DIESEL GENERATOR (CF)	0	0	-	_	0	0	0
SPARK IGN ENG GEN(CF)	0	0	-	-	0	0	0
FUEL CELL - PHOS ACID (CF)	_	-	-	_	-	-	-
STEAM TURB GEN - COAL(CF)	T				SAC		day:
STEAM TURB GEN - OIL (CF)							6720
STIRLING ENG GEN(CF)	0	0	-	-	0	0	0
MHD GENERATOR (CF)							
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-	0	0	0
STEAM TURB GEN(NF)						211	
ORGANIC VAP TURB GEN(NF)				100	i de	12.0	
GAS TURB GEN(NF)							
RADIOISOTOPE GEN(NF)	0	0		-		0	0
STEAM TURB GEN (SOLAR)			T	1 50	100		
ORGANIC VAP TURB (SOLAR)	I	0		-	0		-
GAS TURB GEN (SOLAR)	-	1		-	0	-	-
PHOTOVOLTAIC (SOLAR)	-	-		-	-	-	-
WIND TURB GEN 10-1	-	1	I		-	4	1-
WIND TURB GEN 10-5		I			1-	-	4
WIND TURB GEN 20-1					-	-	-
WIND TURB GEN 20-5	-		-		-	-	
FLYWHEEL STORAGE	T				1	370	010
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v.				***************************************			***************************************			:						A) 80	77 8)85	******		**********	DIA MAJ
•	GAS TURB GEN - SCICF) 10000 GAS TURB GEN - RCICF) 1	DIESEL GENERATOR (CF) 194994	SPARK IGN ENG GEN (CF) 100001		- = :	- =	STIRLING ENG GEN (CF) 1 9989	-=:	- <u>-</u> -	THERMIONIC GEN (CF) !	- = -	. <u>.</u> .	- <u>-</u> -	RADIOISOTOPE GEN (NF) 1000		VAP TURB GEN (SOLAR) ISBERE GAS TURB GEN (SOLAR) ISBERE	PHOTOVOLTAIC (SOLAR) 19886	WIND TURB GEN 10-51 0000	WIND TURB GEN 20-1140000	WIND TURB GEN 20-51	- W -
	SCICE	R CF	N CF	0 (7 10	ר וכב	N CCF	A ICF	N COF	N CCF	N CNF	N CNF	N CNF	N (N	SOLAR	SOLAR	SOLAR N 10-	- OI Z	N 20-	N 20-	TORAG
	- N36	VERATO	ENG GE	S ACI	- 00	10 - 1	ENG 66	VERATO	EAM GE	11C GE	JRB 6E	JRB GE	JRB GE	DPE GE	GEN (GEN C	TATC (JRB 6E	JRB GE	JRB 6E	FLYWHEEL STORAGE!
	GAS TURB GEN - SCICF) I	EL GEN	1GN	- PHG	3 GEN	48 GEN	ING E	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	PRION	STEAM TURB GEN (NF)	VAP TU	GAS TURB GEN (NF)	DISOTO	TURB	TURB TURB	TOVOL I	IND TO	IND TU	TO T	FLYM
	GAS 1	DIES	SPARK	FUEL CELL - PHOS ACID (CF) 186884	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIR	•		Ĭ	STE	ORGANIC VAP TURB GEN (NF)		RADIC	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) CECTOR	NO NO	ASTON	n e		

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11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Туре
GAS TURB GEN - SC (CF)	M
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	M
SPARK IGN ENG GEN(CF)	M
FUEL CELL - PHOS ACID(CF)	M
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	M
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	1 1
THERMIONIC GEN(CF)	M
STEAM TURB GEN(NF)	- 1
ORGANIC VAP TURB GEN(NF)	- 1
GAS TURB GEN(NF)	- 1
RADIOISOTOPE GEN(NF)	T
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	P
PHOTOVOLTAIC (SOLAR)	F + + + + +
WIND TURB GEN 10-1	* F = 7 E 8
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	F
WIND TURB GEN 20-5	P 4 7 7 7
FLYWHEEL STORAGE	
BATTERY STORAGE	

REQUIREMENT: 10 KW CONT 1P-120V

array and water

PARAMETER

10 KW Cont. 1 P-120

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN .ENG GEN (CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL (CF)	· · · · · · · · · · · · · · · · · · ·
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	\$20.00
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	Not modular
STEAM TURB GEN (SOLAR)	12
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWIIEEL STORAGE	
BATTERY STORAGE	

10 KW Cont. 1P-120 V

PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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	1	TON	TO.	W.	40	057	MO	MOD	* * *	400
SYSTEM	\$3ft	Air	HI	470	Cot	THE	POL	50	Will	
GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	-		
GAS TURB GEN - RC (CF)										
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	-	_	_
SPARK IGN ENG GEN(CF)	•	0	0	-	0	0	•	-	_	0
FUEL CELL - PHOS ACID(CF)	-	-	-	_	0	•	1	-	-	
STEAM TURB GEN - COAL(CF)										
STEAM TURB GEN - OIL (CF)						118				
STIRLING ENG GEN(CF)	0	0	0		0	0	•	_	_	
MHD GENERATOR (CF)										•
MHD/STEAM GEN(CF)										
THERMIONIC GEN(CF)	0	•	-	-		0	0	-	46)	
STEAM TURB GEN(NF)										
ORGANIC VAP TURB GEN(NF)										
GAS TURB GEN(NF)									T I	
RADIOISOTOPE GEN(NF)	0	0	0	0	-	0	•	-	-	
STEAM TURB GEN (SOLAR)										
ORGANIC VAP TURB (SOLAR)	0	0	0	-	-	0	-		-	
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	_	•	-	
PHOTOVOLTAIC (SOLAR)	-	0	-	-	0	-	-	•	-	
WIND TURB GEN 10-1	0	0	•	-	0	-	-	-		
WIND TURB GEN 10-5	0	0	•	-	0	-	-		•	
WIND TURB GEN 20-1	0	0	•	-	0	-	-	_		
WIND TURB GEN 20-5	0	0	•	-	0	-	1.	1_		
FLYWHEEL STORAGE							T		П	
BATTERY STORAGE	1	1		1	1-	1	-	1	1	

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists
 and is a governing
 factor in determining system performance and reliability

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			A) 77				1		***************************************				005+05		00E+05	100E+05				REQUIREMENT
URB GEN - SC(CF) LL GENERATOR (CF) 19N ENG GEN (CF) - PHOS ACID (CF) 19 GEN - COAL (CF) 19 GEN - OIL (CF) 10 GENERATOR (CF) 10 GENERATOR (CF) 10 GENERATOR (CF) 10 GENERATOR (CF) 11 GEN - OIL (CF) 12 GEN - OIL (CF) 13 GEN - OIL (CF) 14 GEN - OIL (CF) 15 GEN - OIL (CF) 16 GEN - OIL (CF) 17 CHEB GEN (CF) 18 TURB GEN (SOLAR) 18 TURB GEN (SOLAR) 19 TURB GEN (SOLAR) 10 TURB GEN 10-1 10 TURB GEN 10-1 10 TURB GEN 10-1 10 TURB GEN 10-1 10 TURB GEN 20-5 11 TURB GEN 20-5 11 TURB GEN 20-5 12 TURB GEN 20-5 13 TURB GEN 20-5 14 TURB GEN 20-5 15 TURB GEN 20-5 16 TURB GEN 20-5 17 TURB GEN 20-5 18 TURB GEN 20-5 18 TURB GEN 20-5					8) 80										A) .40500	F .	1	2 2		ak Ina Kali
	URB GEN - SCICE)	URB GEN - RC(CF)	L GENERATOR (CF)	IGN ENG GEN (CF)	GEN - COAL (CF)	18 GEN - OIL (CF)	ING ENG GEN (CF)	D/STEAM GEN (CF)	RMIONIC GEN (CF)	AM TURB GEN (NF)	'AP TURB GEN (NF)	AS TURB GEN (NF)	SOTOPE GEN (NF)	TURB GEN (SOLAR)	TURB GEN (SOLAR)	OVOLTAIC (SOLAR) ND TURB GEN 10-1	ND TURB GEN 10-5	NO TURB GEN 20-5	BATTERY STORAGE	

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PARAMETER: 16 OTHER ENERGY PROD

REQUIREMENT: 10 KM CONT 1P-120V

1.3

10 KW Cont. 1 P-120V

PARAMETER

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL(CF)	Platifium
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	V 3 31.0
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	2 1 1
THERMIONIC GEN(CF)	No.
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	1 1 1
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	3 4 2 2 21
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None None
WIND TURB GEN 10-1	Possibly lead for conventional batteries Possibly lead for conventional batteries
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	Possibly lead for conventional batteries Possibly lead for conventional batteries
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	1.1 2 2 2 3 4 4

SECTION XVII

TEN KILOWATT, 8 HOUR DC

REQUIREMENT

Power Level:

10 Kw

Operating Mode:

8 hours per day

Frequency/Phase:

DC

Voltage Level:

28 V

REQUIREMENT: 10 KW 8 HR DC-28V

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	EN - SCICF)	EN - RC(CF)	ERATOR (CF)	NG GEN (CF)	S ACID (CF)	- COAL (CF)	- 01L (CF)	NG GEN (CF)	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) 108088	STEAM TURB GEN (NF)	18 GEN (NF)	GAS TURB GEN (NF)	E GEN (NF)	SEN (SOLAR)	BEN (SOLAR)	GAS TURB GEN (SOLAR) IOA	PHOTOVOLTAIC (SOLAR) CORBO	WIND TURB GEN 10-1100000	WIND TURB GEN 10-5100000	WIND TURB GEN 20-110	WIND TURB GEN 20-51080A	FLYWHEEL STORAGEIOCBOOK	BATTERY STORAGEID	
	GAS TURB GEN - SC (CF) IG	GAS TURB GEN - RC(CF)	DIESEL GENERATOR (CF)	SPARK IGN ENG GEN (CF)!A	FUEL CELL - PHOS ACID (CF) 16	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) IA	MHD GENE	MHD/STEA	THERMIONI	STEAM TUR	ORGANIC VAP TURB GEN (NF)	GAS TUR	PADIOISOTOPE GEN (NF) : ######	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR) IREBRE	GAS TURB G	PHOTOVOLTA	WIND TUR	WIND TUR	WIND TUR	WIND TUR	FLYWHE	BATTE	

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FLYWHEEL STORAGE!BEGGGA 1 A 80 B) 85 C) 90 BATTERY STORAGE!D

REQUIREMENT: 10 XW 8 HR DC-28V

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77 8) 80 C) 85	9 () 92		
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ORGANIC VAP TURB GEN (NF)!			
GAS TURB GEN (NF.)			

RADIOISOTOPE GEN (NF) interconnecentation of the contraction of the co

GAS TURB GEN (SOLAR) 18A
1 A)80
PHOTOVOLTAIC (SOLAR) ICB000000000000000
A) 77 8)85 C)95
WIND TURB GEN 10-1100

I A) 77 8) 85 WIND TURB GEN 10-51448A I A) 77 8) 85 WIND TURB GEN 20-110

WIND TURB GEN 20-518A

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	WIND TURB GEN 10-11000	1 A177 B185	WIND TURB GEN 10-518688A	1 A) 77 B) 85	MIND TURB GEN 20-11D	1 A) 77 B) 85	N 20-5186A	1 A) 77 B) 85	FLYWHEEL STORAGE! BCBBBBA	1 A) 80	BATTERY STORAGE10	1 A) 77	ex ·
	RB GE		RB GE		RB GE		RB 6E		EEL S		ERY S		
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GAS TURB GEN - SCICF) 100EA	
GAS TURB GEN - RC(CF)	
DEESEL GENERATOR (CF)	
SPARK IGN ENG GEN (CF) : 6000	
FUEL CELL - PHOS ACID (CF)	•
STEAM TURB GEN - COAL (CF)	2
STEAM TURB GEN - OIL (CF)	の の の の の の の の の の の の の の の の の の の
STIRLING ENG GEN (CF) 104	
MHD GENERATOR (CF)	
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	THERMIONIC GEN (CF): ************************************
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF) ISQUEDEBREES	
STEAM TURB GEN (SOLAR)	A) .5940000E-00
ORGANIC VAP TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR): GREGORGE GREGORG GREGORGE GREGORG GREGORG GREGORG GREGORG GREGORG GREGORG GREGORG GREGORGE GREGORG GREGO
GAS TURB GEN (SOLAR) IA	
PHOTOVOLTAIC (SOLAR)	***************************************
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REQUIREMENT: 10 KM 8 HR DC-28V

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3.0	98 C) 88							A						v	V							
YEARS 2.0 2.5	A) 77 B) 65 C) 90		#0400000000000000000000000000000000000		V0000000000000000000000000000000000000							v				1980C	4177 8185 C195	00000	0	00000	A) 80 8) 85 C) 90	95
vo .5 1.0 1.5 2.0 2.5 3.0	GAS TURB GEN - SC(CF) 1400-1410-1410-1410-1410-1410-1410-1410	;	ACID (CF): 1 8.00000000000000000000000000000000000		STIRLING ENG GEN (CF): ####################################			THEMIONIC GEN (CF): B429090000000000000000000000000000000000				RADIOISOTOPE GEN (NF) I TOTAL TOTAL TOTAL TOTAL CONTINUE		***************************************	GAS TURB GEN (SOLAR)!Georgeogogogogogogogogogogogogogogogogogo	PHOTOVOLTAIC (SOLAR): 1000000000000000000000000000000000000	1 A 77 B) 85 C) WIND TURB GEN 10-1104089000000000000000000000000000000000	WIND TURB GEN 10-51-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-	WIND TURB GEN 20-11-04-04-04-04-04-04-04-04-04-04-04-04-04-		FLYWHEEL STORAGE: A compagnet of the com	8attery Storage: ####################################
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	GAS TURB GEN - SC(CF)	DIESEL GENERATOR (CF): 000000000000000000000000000000000000	FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURR GEN (NF)	RADIOISOTOPE GEN (NF	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR): BECREEFIGE FOR FROM THE FOREST CONTROL OF TURB GENERAL SOLAR	GAS TURB GEN (SOLAR	PHOTOVOLTAIC (SOLAR	WIND TURB GEN 10-	WIND TURB GEN 10-	WIND TURB GEN 20-	WIND TURB GEN 20-	FLYWHEEL STORAG	BATTERY STORAG

GAS TURB GEN - SC(CF)	A) 77 B) 85 C) 90	A 9 7 7 7 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9	
GAS TURB GEN - RC(CF) I SPARK IGN ENG GEN (CF) I STEAM TURB GEN - COAL (CF) I STEAM TURB GEN - OIL (CF) I STEAM TURB GEN - OIL (CF) I STEAM TURB GEN (CF) I MHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) I		10000000A	
SPARK 16N ENG GEN (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN (CF) MHD GENERATOR (CF) MHD/STEAM GEN (CF) THERMIONIC GEN (CF) STEAM TURB GEN (NF) GAS TURB GEN (NF) GAS TURB GEN (NF)		177	
STEAM TURB GEN - COAL (CF) I STEAM TURB GEN - OIL (CF) I STIRLING ENG GEN (CF) I MHD GENERATOR (CF) I MHD/STEAM GEN (CF) I THERMIDNIC GEN (CF) I STEAM TURB GEN (NF) I GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) I			
STEAM TURB GEN - COAL (CF) I STEAM TURB GEN - OIL (CF) I STIRLING ENG GEN (CF) I MHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) I		A177	
STEAM TURB GEN - OIL (CF) I STIRLING ENG GEN (CF) I MHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I GAS TURB GEN (NF) I GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) I			
STIRLING ENG GEN (CF) I MHD GENERATOR (CF) I MHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I GAS TURB GEN (NF) I GAS TURB GEN (NF) I RADIOISOTOPE GEN (NF) I			
MHD GENERATOR (CF) I MHD/STEAM GEN (CF) I THERMIONIC GEN (CF) I STEAM TURB GEN (NF) I GAS TURB GEN (NF) I GAS TURB GEN (NF) I		V	
MMD/STEAM GEN (CF)! THERMIONIC GEN (CF)! STEAM TURB GEN (NF)! GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)!	▼ 排除型物 原生的性的 医外角结肠 法整理处理的 医克里姆斯 医抗硬化医抗胆能 医医皮肤的 的第三人称形式	A) 85	
STEAM TURB GEN (CF)! STEAM TURB GEN (NF)! GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)!			
STEAM TURB GEN (NF)! ORGANIC VAP TURB GEN (NF)! GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)!			
ORGANIC VAP TURB GEN (NF)! GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)!			
GAS TURB GEN (NF)! RADIOISOTOPE GEN (NF)!			
RADIOISOTOPE GEN (NF) !			
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STEAM TURB GEN (SOLAR)!		三 集聯を打	
ORGANIC VAP TURB GEN (SOLAR)!			
GAS TURB GEN (SOLAR)!			
PHOTOVOLTAIC (SOLAR)!	· 中有學生可以可用的法 阿尔马尔一氏病 医中枢性病毒 医原理 二子提供到现		
WIND TURB GEN 10-11			
WIND TURB GEN 10-51			
WIND TURB GEN 20-11			
WIND TURB GEN 20-51			
FLYWHEEL STORAGE!			
BATTERY STORAGE!			

REQUIREMENT: 10 KW 8 HR DC-28V

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GAS TURB GEN - SCICE)								
GAS TURB GEN - RC(CF)								
DIESEL GENERATOR (CF)								
SPARK IGN ENG GEN (CF)								
FUEL CELL - PHOS ACID (CF) is	9							
STEAM TURB GEN - COAL (CF)	A) // 6) 60 (.) 65							
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN (CF)								
MHD GENERATOR (CF)								
MHD/STEAM GEN (CF)								
THERMIONIC GEN (CF)								
STEAM TURB GEN (NF)								
ORGANIC VAP TURB GEN (NF)								
GAS TURB GEN (NF)								
RADIOISOTOPE GEN (NF) 104								
STEAM TURB GEN (SOLAR)	1.0							
ORGANIC VAP TURB GEN (SOLAR) I DECENDED CONCENTRATION OF THE PROPERTY OF THE P	***************************************		VIIIIIII					
GAS TURB GEN (SOLAR) : 00000000000000000000000000000000000	***************************************		A) 80					
PHOTOVOLTAIC (SOLAR) I dendended dendende de d	08(4	***************************************	***************************************	***************************************		9		
WIND TURB GEN 10-11	10-11-000000000000000000000000000000000	********	***************************************	0	A) 77 B) B5 C) 95	C) 95		
WIND TURB GEN 10-51	*************		***************************************	10-5! 00000000000000000000000000000000000	•			
WIND TURB GEN 20-11	20-110000000000000000000000000000000000	Session of the Season		A) 77 B) 85				
	20-5100000000000000000000000000000000000	******						
FLYWHEEL STORAGE 100000E0000A	00000E0000A	6 6						
BATTERY STORAGEID	20127 91.05							
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x 10 × .6 KILOGRAMS SPARK IGN ENG DEN ILT. TETTETT STATEMENT OF THE CELL - PHOS ACID (CF) INCOMENCE CONTRACTOR OF THE CELL - PHOS ACID (CF) INCOMENCE CONTRACTOR OF THE CELL - PHOS ACID (CF) INCOMENCE CONTRACTOR OF THE CELL - PHOS ACID (CF) INCOMENCE CONTRACTOR OF THE CENTRACTOR OF TH . ~ GAS TURB GEN - SC(CF) 10000000000 1 A) 77 B) 85 C) 90 GAS TURB GEN - RC(CF) 1 STEAM TURB GEN - COAL (CF)

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STEAM TURB GEN - OIL (CF)

MHD/STEAM GEN (CF)
THERMIONIC GEN (CF)

THERMIONIC GEN (CF)

ORGANIC VAP TURB GEN (NF)
GAS TURB GEN (NF)
RADIOISOTOPE GEN (NF)
STEAM TURB GEN (SOLAR)

ORGANIC VAP TURB GEN (SOLAR) GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR)

WIND TURB GEN 10-51 WIND TURB GEN 20-11

FLYWHEEL STORAGE WIND TURB GEN 20-5

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REQUIREMENT: 10 KW 8 HR DC-28V

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GAS TURB GEN - SCICF)			
GAS TURB GEN - RC(CF)	(CF)		
DIESEL GENERATOR (CF)			
SPARK IGN ENG GEN (CF)			
FUEL CELL - PHOS ACTO (CF)			
STEAM TURB GEN - COAL (CF)	CF	A) 77 6) 60 C) 65	
STEAM TURB GEN - OIL (CF)	E G		
STIRLING ENG GEN (CF)		•	
MHD GENERATOR (CF)	(6)	A) 85	
MHD/STEAM GEN (CF)	CF.		
THERMIONIC GEN (CF)			
STEAM TURB GEN (NF)	(NF)	A) 90	
ORGANIC VAP TURB GEN (NF)	(NF)		
GAS TURB GEN (NF)	(NF)		
RADIOISOTOPE GEN (NF)	(NF)	,但此次是中心性,但是不是一个,但是一个,也是一个,也是一个,也是一个,也是一个,也是一个,也是一个,也是一个,也	
STEAM TURB GEN (SOLAR)	LAR		
ORGANIC VAP TURB GEN (SOLAR)	LAR		
GAS TURB GEN (SOLAR)	LAR		
PHOTOVOLTAIC (SOLAR)	LAR		
WIND TURB GEN 10-1	10-11		
WIND TURB GEN 10-5	10-5		
WIND TURB GEN 20-1	20-11		
WIND TURB GEN 20-5	20-51		
FLYWHEEL STORAGE	RAGE		
BATTERY STORAGE	RAGE		

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GAS TURB GEN - SCICF)	CICELL			•		V	V			
GAS TURB GEN - RC(CF)	CICE					B 1714) 85 C) 90			
DIESEL GENERATOR (CF)			V	******						
SPARK IGN ENG GEN (CF)	G.	******		*******		Y0000000000000000000000000000000000000				
FUEL CELL - PHOS ACTO (CF)		******		***************************************		A) 77				
STEAM TURB GEN - COAL (CF)	Ce		à	A) // 8) 80 () 83	£					
STEAM TURB GEN - OIL (CF)	(P)									
STIRLING ENG GEN (CF)		•	A0000000000000000000000000000000000000	4.						
MMD GENERATOR (CF)	(6)		A) 85							
MHD/STEAM GEN (CF)	(65)	1								
THERMIONIC GEN (CF)	(3)		******		*******	Y				
STEAM TURB GEN (NF)	(NF)					A) 90				
ORGANIC VAP TURB GEN (NF)	(NE)									
GAS TURB GEN (NF)	(NF)									
RADIOISOTOPE GEN (NF)	(NE)									
STEAM TURB GEN (SOLAR)	OLAR)									
ORGANIC VAP TURB GEN (SOLAR)	OLAR)									
GAS TURB GEN (SOLAR)	OLARI	A 2000 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日								
PHOTOVOLTAIC (SOLAR)	OLAR)									
WIND TURB GEN 10-11	10-11									
WIND TURB GEN 10-51	10-51									
WIND TURB GEN 20-11	20-11					のであることは、100mmのでは、10				
WIND TURB GEN 20-5	20-51									
FLYWHEEL STORAGE				28200000000000000000000000000000000000	430000000BF					
BATTERY STORAGE	ORAGE			V++00000000000000000000000000000000000	V0000	And the second s			A Company of the Second	And the second second

10 KW 8 Hr. 3P-240V

PARAMETER

7) Environmental Constraints

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The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	4.Ca	4h	So	*C	\$0.	, °0.	+ 40	00	50	2	43
GAS TURB GEN - SC (CF)	1	_			1	1.	Τ.	T-	Г		Г
GAS TURB GEN - RC (CF)	+	+	0	0	•	•	1	•	-	-	-
DIESEL GENERATOR (CF)	+		0	0							
SPARK IGN ENG GEN(CF)	1-	1-	0	0		-		-	1	1-	1
FUEL CELL - PHOS ACID (CF)	1-	-	-	-	-	-	0	-	-	1	-
STEAM TURB GEN - COAL (CF)	1			1			1				
STEAM TURB GEN - OIL (CF)	T						1		1		
STIRLING ENG GEN(CF)	1-	1-	0	0					-	1.	1
MHD GENERATOR (CF)				1	1	1	1	1	1		T
MHD/STEAM GEN(CF)					T			11-			
THERMIONIC GEN(CF)	1-	-	0	0	1.	10	0		L		
STEAM TURB GEN(NF)	T		1	1	1	Ť	Ť	1	1		Ī
ORGANIC VAP TURB GEN(NF)	1										T
GAS TURB GEN(NF)					T					100	
RADIOISOTOPE GEN(NF)	1-	1	-	1-	-	1-	1-	-	-	-	
STEAM TURB GEN (SOLAR)											
ORGANIC VAP TURB (SOLAR)	1-		1-	-	-	1_		1_	T	0	
GAS TURB GEN (SOLAR)	1	-	t_				0			Ľ	
PHOTOVOLTAIC (SOLAR)	1-	1-	-		1	-	-	-	1		Ē
WIND TURB GEN (ALL)	1	1-		-	-	1	-	-			
FLYWHEEL STORAGE	1	-			-	-	1		-		
BATTERY STORAGE	+	+	-	-	-	-	-	-	+-		+

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10 KW 8 Hr. DC-28V

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- no limitation

- minor limitation major limitation

- overriding limitation

the deligible of the de Swaning and adding

or ted by the est SYSTEM GAS TURB GEN - SC (CF) GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) SPARK IGN ENG GEN(CF) FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN (CF) 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN (NF) RADIOISOTOPE GEN(NF) STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB GEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE BATTERY STORAGE

VIII.

10 KW 8Hr. DC-28V

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance

rdence of capacity respections to the order trapid to of the property of the order trapid to order to telical of a training of a tra

SYSTEM	et,	231	per	Sper	079	00	47
GAS TURB GEN - SC (CF)		0	-	-	0	0	0
GAS TURB GEN - RC (CF)							
DIESEL GENERATOR (CF)	0	0	-	-	0	0	0
SPARK IGN ENG GEN(CF)	•	0	-	_	0	0	0
FUEL CELL - PHOS ACID(CF)	-	-	-	_	-	-	_
STEAM TURB GEN - COAL(CF)							
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN(CF)	0	0	-	-	0	0	0
MHD GENERATOR (CF)							
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-		0	0
STEAM TURB GEN(NF)							
ORGANIC VAP TURB GEN(NF)							
GAS TURB GEN(NF)							
RADIOISOTOPE GEN(NF)	0	0	-	-	0	0	0
STEAM TURB GEN (SOLAR)	-						
ORGANIC VAP TURB (SOLAR)	-	0	•	-	0	•	-
GAS TURB GEN (SOLAR)	-	-	•	-	0	-	-
PHOTOVOLTAIC (SOLAR)	-	-	•	-	-	-	-
WIND TURB GEN 10-1	-	-	-		-	-	-
WIND TURB GEN 10-5	_	-	1		1	-	-
WIND TURB GEN 20-1	_	-	- 0		-	-	-
WIND TURB GEN 20-5	-	-	-		-	-	1
FLYWHEEL STORAGE	_	-	_	-	-	-	-
BATTERY STORAGE	-	-	-	-	-	-	-

REGUIREMENT: 10 KM 8 HR DC-28V

6													190											800000000000000000000000000000000000000
	A) 77 B) 85 C) 90	A) 77	75 77	A) 17 61 60 C) 65		Y0000000000000000000000000000000000000	A.85		Y	A) 90			Y0000000000000000000000000000000000000						A) 77 B) 85		A) 77 8) 85	A) 77 B) 85		
TOTAL MAN MINISTER	GAS TURB GEN - RC (CF)	DIESEL GENERATOR (CF)	FUEL CELL - PHOS ACIO (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF)	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SCLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	And was south cast	מבים פרים	FLTWHEEL STUMAGE	BALIERT SIUMAGE

PARAMETER

10 KW 8 HR DC-28V

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system
F - fixed system

System	Type
(AS TURB GEN - SC (CF)	М
GAS TURB GEN - RC (CF)	<u>-</u>
DIESEL GENERATOR (CF)	M
SPARK IGN ENG GEN(CF)	М
FUEL CELL - PHOS ACID(CF)	М
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL(CF)	97 19 10
STIRLING ENG GEN(CF)	М
MHD GENERATOR (CF)	finally .
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	M
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	-
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	T
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	F
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	F
BATTERY STORAGE	М

5. 1.0 1.5	GAS TURB GEN - SC (CF) 106 1 A) 77 B) 85 C) 90	SPARK IGN ENG GEN (CF) 1 A) 77	FUEL CELL - PHOS ACID (CF) 00000000000000000000000000000000000	STEAM TURB GEN - COAL (CF)!	STEAM TURB GEN - OIL (CF)!	STIRLING ENG GEN (CF) 10A	MHD GENERATOR (CF)!	MHD/STEAM GEN (CF)!	THERMIONIC GEN (CF)!	STEAM TURB GEN (NF)!	GAS TURB GEN (NF) I	RADIOISOTOPE GEN (NF) 1446444644464464646464646464666666666868		.60000000E+02	GAS TORB GEN (SOLAR): CONTROLLED	I A) 77 B) 85 C) 95 WIND TURB GEN 10-11D	277	WIND TURB GEN 20-110	E	180 B185 C190	BATTERY STORAGE:0 ! A) 77 B) 85
COLD STARTMINUTES			00000000000000000000000000000000000000	0000																	
x 10 3.0 3.5			90	66.7																	
0												77.17	107	00 (Y	A) 60						

10 KW 8 Hr. DC-28V

PARAMETER

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

	- Caracar Maccara
GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	and the second s
STEAM TURB GEN - OIL(CF)	Figure 1 - First - Fir
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	(vo. 1805 - 1625 B)
MHD/STEAM GEN(CF)	The first the second se
THERMIONIC GEN (CF)	Partly modular
STEAL TURB GEN (NF)	(性) 使取到
ORGANIC VAP TURB GEN (NF)	2501900 3
GAS TURB GEN (NF)	Control (old Language
RADIOISOTOPE GEN (NF)	Not mcdular
STEAM TURB GEN (SOLAR)	CELLACE BEAUTIFE
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully modular

10 KW 8 HR. DC-28V

PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

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SYSTEM	Aur	41.0	Nito.	470	, 60	V.	#Of	50	4
GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	_	_
GAS TURB GEN - RC (CF)									
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	•	-
SPARK IGN ENG GEN(CF)	•	0	0	1	0	0	•	-	-
FUEL CELL - PHOS ACID (CF)	_	1	_	-	0	-	-	-	-
STEAM TURB GEN - COAL (CF)									
STEAM TURB GEN - OIL (CF)									
STIRLING ENG GEN(CF)	0	0	0	-	0	0	•	-	-
MHD GENERATOR (CF)									
MHD/STEAM GEN(CF)									
THERMIONIC GEN(CF)	0	•	-	-		0	0	-	_
STEAM TURB GEN(NF)					i di	An			
ORGANIC VAP TURB GEN(NF)									Įį.
GAS TURB GEN(NF)	T			Sec. Se					
RADIOISOTOPE GEN(NF)	0	0	0	0	001	0			-
STEAM TURB GEN (SOLAR)	1		-	-		-			
ORGANIC VAP TURB (SOLAR)	6	0	0	-	-	0	-		-
GAS TURB GEN (SOLAR)	0	0	0	1-	0	0	1		-
PHOTOVOLTAIC (SOLAR)	1-	0	-	1-	0	-	1		-
WIND TURB GEN 10-1	0	0		-	0	_	-	-	
WIND TURB GEN 10-5	0	0		1-	0	-	-	-	
WIND TURB GEN 20-1	0	0	•	-	0	-	-		
WIND TURB GEN 20-5	0	0	•	1	0				-
FLYWHEEL STORAGE	0	-	•		_	-	-		
BATTERY STORAGE	1-	0	-	-	0	-	-	-	-
				40	-	081	-	_	-

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

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GAS TURB GEN - SC(CF) 180846888866686

GAS TURB GEN - RC (CF) !

DIESEL GENERATOR (CF):00000000A

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SPARK IGN ENG GEN (CF):000000000

A) 77

FUEL CELL - PHOS ACID (CF) 1A

STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING FNG GEN (CF) 1000A

MHD GENERATOR (CF)

MHD/STEAM GEN (CF)

REQUIREMENT: 10 KW 8 HR DC-28V

BATTERY STORAGEID

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FLYWHEEL STORAGEIG

WIND TURB GEN 20-110 1 A) 77 8) 85 WIND TURB GEN 10-510

WIND TURB GEN 10-11D

WIND TURB GEN 20-510

PARAMETER: 15 MAINT AND OPER

STEAM TURB GEN (NF)

ORGANIC VAP TURB GEN (NF)

GAS TURB GEN (NF)

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GAS TURB GEN - SCICF)	AD000000000000000000000000000000000000
GAS TURB GEN - RC(CF)	しつじ 佐田 からえ
DIESEL GENERATOR (CF)	CF) : 00000000000000000000000000000000000
SPARK IGN ENG GEN (CF)	CF): 10400000000000000000000000000000000000
FUEL CELL - PHOS ACID (CF)	
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF)	
MHD GENERATOR (CF)	CALLA CONTRACTOR OF THE CONTRA
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	
STEAM TURB GEN (NF)	OEW TO SERVICE THE
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	***************************************
GAS TURB GEN (SOLAR)	i
PHOTOVOLTAIC (SOLAR)	16.1
WIND TURB GEN 10-11	
WIND TURB GEN 10-51	IS-1
WIND TURB GEN 20-11	
WIND TURB GEN 20-5	
FLYWHEEL STORAGE	30
BATTERY STORAGE!	106 L W. LE BITT GIVE

10 KW 8 Hr. DC-28V

PARAMETER

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID (CF)	Platinum
STEAM TURB GEN - COAL (CF)	FIGURE STATE OF THE STATE OF TH
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	None
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	TOTAL STATE
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN(NF)	None
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	None
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	None
BATTERY STORAGE	Possibly lead for conventional batteries

SECTION XVIII

TEN KILOWATT, 8 HOUR 30

REQUIREMENT

Power Level: 10 Kw

Operating Mode: 8 hours per day

Frequency/Phase: 60 Hz/3Ø

Voltage Level: 240 V

Possibly head toe convertional backeries

REQUIREMENT: 10 KW 8 HR 3P-240V

6. 8. 7. 9. C. 4. E. 2.									Y1111011111111111111111111111111111111	A.) 90			.5500000E+07	ORGANIC VAP TURB GEN (SOLAR) I REGELEGOEGOEGOEGOEGOEGOEGOEGOEGOEGOEGOEGOEGOE	A) 80	4)77 8)85 C)95					
1	1 A177 B185 C190	A. 77	1 A) 77	1 A) 77 B) B0 C) B5	#1 12 (10) 92 (1) 32 Color Sew Man Color (1)	4	28.04						4		GAS TURB GEN (SOLAR)!9A A)80 PHOTOVOLTAIC (SOLAR)!C##8##################################	1000000	1 A) 77 B) 85	10 4) 77 8) 85		FLYWHEEL STORAGE:#CB###################################	
SCICE	RC (CF	A (CF	2 0	1	ר וכב	N ICE	R CF	IN CF	N CF	IN (NF	N CNF	N (NF)	N (NF)	SOLAR	SOLAR	N 10-	10-01 N	N 20-	N 20-	TORAGE	TORAGE
GAS TURB GEN - SCICF) 1G	GAS TURB GEN - RCICE)!	DIESEL GENERATOR (CF) 1A	FUEL CELL - PHOS ACID (CF) 16	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) 1A	MHD GENERATOR (CF) !	MHD/STEAM GEN (CF) !	THERMIONIC GEN (CF) 1998	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF) 14900 STEAM TURB GEN (SOLAR) I A)	RGANIC VAP TURB GEN	GAS TURB GEN (SOLAR) 1 A) PHOTOVOLTAIC (SOLAR) 1 CR	WIND TURB GEN 10-1190#00D	WIND TURB GEN 10-514000008A	WIND TURB GEN 20-11D	WIND TURB GEN 20-51686	FLYWHEEL S	BATTERY STORAGETO

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	GAS TURB GEN - SCICE) !	1 4) 77 8) 85 C) 90
	GAS TURB GEN - RC(CF)!	
	DIESEL GENERATOR (CF) IA	
	SPARK IGN ENG GEN (CF) IA	
	FUEL CELL - PHOS ACID (CF) 16	
	STEAM TURB GEN - COAL (CF)	
	STEAM TURB GEN - OIL (CF)	のでして、これでは、1977年の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の
	STIRLING ENG GEN (CF) FOR	
	MHD GENERATOR (CF)	
-	MHD/STEAM GEN (CF)	
.,	THERMIONIC GEN (CF)	THERMIONIC GEN (CF) : ### ### ###########################
	STEAM TURB GEN (NF)	
	ORGANIC VAP TURB GEN (NF)	
	GAS TURR GEN (NF)	
	RADIOISOTOPE GEN (NF)	RADIOISOTOPE GEN (NF) I DO CONTROLL OF THE CONTROL OF THE CO
	STEAM TURB GEN (SOLAR)	50. 30000 BIT. (4.1)
	ORGANIC VAP TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) I PREFECTORES FOR FROM THE FORM TO THE FORM TO THE FEBRUARY SERVICE FOR THE FEBRUARY SERVICE
	GAS TURB GEN (SOLAR) I OA	DA SE
	PHOTOVOLTAIC (SOLAR) ICBEREREE	LCB-CCCCCA C
	WIND TURB GEN 10-1100	1 A) 77 B) 85 C) 95
	MIND TURB GEN 10-51848A	1 A) 77 B) 85 1868A
	WIND TURB GEN 20-11D	1 4) 77 8) 85
	MIND TURB GEN 20-518A	1 A) 77 B) 85
	FLYWHEEL STORAGE	FLYWHEEL STORAGE GENERAL
	BATTERY STORAGEID	1 A) 80 8) 85 C) 90

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1 TURB GEN - SC(CF) 100EA 1 TURB GEN - SC(CF) 100EA 1 TURB GEN - RC(CF) 100EAA 1 TURB GEN - RC(CF) 100EAA 1 L - PHOS ACID (CF) 100EAAA 1 L - PHOS ACID (CF) 10A 1 L - PHOS ACID (CF) 10A 1 RLING ENG GEN (CF) 10A 1 RH GEN - OIL (CF) 10A 1 A) 95 1 HERHIONIC GEN (CF) 10A 1 A) 95 1 A) 77 8) 85 2 A) 80 80 85 C) 90 1 A) 80 80 85 C) 90	.2 .3 .4 .5 .6 .7										VIIII000000000000000000000000000000000	06(1			RADIOISOTOPE GEN (NF) I GODING CONTRACTOR CO		RGANIC VAP TURB GEN (SOLAR) INTREMENDENT OF THE TOTAL OF THE TOTAL OF THE GENERAL OF THE GENERAL OF THE GENERAL OF THE TOTAL OF THE TOT	A) 80	PHOTOVOLTAIC (SOLAR) !CORPUBGIORICE CONTINUE CON	A) 77 B) 85 C) 95					
		90EA 4)77 8)85 C)90	Souther 24 September 24 con	A111	A) 77			40			***************************************				*************		***************************************	Accessed to the same	C	0	00864 00864	A) 77 8) 85	89.4 84.4	I A) 77 B) 85 FLYWHEEL STORAGE! #CB###A	A) 80 8) 85 C) 90
		GAS TURB GEN - SC(CF) 100EA	DIESEL GENERATOR (CF) 1864	SPARK IGN ENG GEN (CF) ! BBBBB	FUEL CELL - PHOS ACTO (CF) 16	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) 10A	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) 100000000	STEAM TURR GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURR GEN (NF)	RADIOISOTOP	STEAM TURB GEN (SOLAR)	RGANIC VAP TURB G	GAS TURB GEN (SOLAR) IA	PHOTOVOLTA	WIND TURB GEN 10-1100D	WIND TUR	WIND TURB GEN 20-110	I A) WIND TURB GEN 20-5184A	FLYWHEI	BATTERY STORAGEID

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ORGANIC VAP

REGUIREMENT: 10 KW 8 HR 39-240V

	A) 80 PHOTOVOLTAIC (SOLAR) 40-11	ORGANIC VAP TURB GEN (SOLAR): #4444404040404040404040404040404040040404	RADIOISOTOPE GEN (NF)! general and an analyses	GAS TURB GEN (NF.)	ORGANIC VAP TURB GEN (NF)!	THERMIONIC GEN (CT) I COLOROGO	MHD/STEAM GEN (CF)	MHD GENERATOR (CF)	STEAM TURB GEN - DIL (CF)! STIRLING ENG GEN (CF)!	STEAM TURB GEN - COAL (CF)!			1.0 1.5 2.0 2.5 3.0 3.5 4.0 Georgeogeogeogeogeogeogeogeogeogeogeogeogeog	3.5	AS TURB GEN - SC(CP) CONTRIBUTION CP CP CP CP CP CP CP C
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C METERS X 10	GAS TURB GEN - SCICE) I GOTT TO CONTROL OF THE CONT	A) 77 B) 85 C) 90	DIESEL GENERATOR (CF) I DAGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG		大阪ののでは、このでは、このでは、日本のでは、			STIRLING ENG GEN (CF)! OPERSON CONTROL OF THE STIRLING CONTROL OF THE STIRLING ENG GEN (CF)!	A) 65															
			***************************************	,,,,,,,,,,,,,,,,,,,,,,,				***************************************																
	AS TURB GEN - SCICET	GAS TURB GEN - RC(CF)	DIESEL GENERATOR (CF)	PARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACTO (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) !	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR)	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB 6EN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51	FLYWHEEL STORAGE!

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REQUIREMENT: 10 KM 8 HR 3P-240V

	.0 .25	S.	27.	SQUARE METERS	x 10 1.5	1.75	2
GAS TURB GEN - SCICF) !				· · · · · · · · · · · · · · · · · · ·			
GAS TURB GEN - RC (CF)							
DIESEL GENERATOR (CF)							
SPARK IGN ENG GEN (CF)							
FUEL CELL - PHOS ACID (CF) 16	9						
STEAM TURB GEN - COAL (CF)	C8(2 08(8 11(V))						
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN (CF)							
MHD GENERATOR (CF)							
MHD/STEAM GEN (CF)							
THERMIONIC GEN (CF)							
STEAM TURB GEN (NF)							
ORGANIC VAP TURB GEN (NF)							
GAS TURB GEN (NF)							
RADIOISOTOPE GEN (NF) 184	4						
STEAM TURB GEN (SOLAR)							
ORGANIC VAP TURB GEN (SOLAR) : PREFECCESCOS PREFECCESCOS PREFECCES	***************************************	***************************************	***************************************				
GAS TURB GEN (SOLAR) I CONCORDED CONTROL	***************************************		A) 80		第四章を自己の表表を示する。		
DOCCOSCOSCOSCOSCOSCOSCOSCOSCOSCOSCOSCOSCO		***************************************		***************************************	***************************************	900	
AINO TURA GEN 10-11-25-25-25-25-25-25-25-25-25-25-25-25-25-	************	***************************************	*********	000000000000000000000000000000000000000	ATT 5165 C195	6	
WIND TURB GEN 10-5: PORTION OF THE PROPERTY OF	***************************************		••••••	**************************************	1		
WIND TURB GEN 20-110000000000000000000000000000000000	200000000000000000000000000000000000000	Tark Starks					
WIND TURB GEN 20-5100000000000000000000000000000000000		00000000000000000000000000000000000000					
FLYWHEEL STORAGE INGESTORAL	1 4) 80 8) 85 C) 90						
BATTERY STORAGEID	0177 8185			28 · · · · · · · · · · · · · · · · · · ·	deres de sales de la constante		

BATTERY STORAGE I 40 - 26000000E+04 A 3 - 26000000E+04

FLYWHEEL STORAGE!

	0 .1 .2 .3 .4 .5 .6 .7 .8 .9
GAS TURB GEN - SCICE)	
GAS TURB GEN - RC(CF)	A) / 6/80 C) 40
DIESEL GENERATOR (CF)	DIESEL GENERATOR (CF): ************************************
SPARK IGN ENG GEN (CF)	
FUEL CELL - PHOS ACTO (CF)	FUEL CELL - PHOS ACID (CF) interestantesta
STEAM TURB GEN - COAL (CF)	A) 77 6/00 C) 85
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN (CF)	V
MHD GENERATOR (CF)	A) 85
MHD/STEAM GEN (CF)	
THERMIONIC GEN (CF)	
STEAM TURB GEN INF!	
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	在1984年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1988年的1
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB GEN (SOLAR)	
GAS TURB GEN (SOLAR)	
PHOTOVOLTAIC (SOLAR)	
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	
WIND TURB GEN 20-1	
WIND TURB GEN 20-5	

FLYWHEEL STORAGE! BATTERY STORAGE!

WIND TURB GEN 20-51

WIND TURB GEN 10-5 WIND TURB GEN 20-11

		.0	.5	Sec. 110	27.	1.0 × 6	KG PER YEAR	5	x 10 1.5	1.75	8
CAS TURB GEN - SC(CF) 1000000000000000000000000000000000000	CE							0000000	V0000000000000000000000000000000000000		
GAS TURB GEN - RC(CF)	3								•	A) // 8) 85 C/ 90	2
DIESEL GENERATOR (CF) 185868888888888888888888888888888888888	CE	***************************************	-		***						
SPARK IGN ENG GEN (CF) I DESCRIPTION OF THE CONTROLL OF THE CONTROLL OF THE CONTROL OF THE CONTR	G.	***************************************	******	***************************************					4		
FUEL CELL - PHOS ACID (CF) 1000000000000000000000000000000000000	CF		20000	000							
STEAM TURB GEN - COAL (CF)	G.		A) 11 6160 C163	68.7							
STEAM TURB GEN - OIL (CF)	CE										
STIRLING ENG GEN (CF) 1998989898989898	G.		*								
MHD GENERATOR (CF)	G.	47.85									
MHD/STEAM GEN (CF)	CF.										
THERMIONIC GEN (CF) : SARESTANDESCENA CONTRACTOR CONTRA	- E	*************	******	*******			4.00				
STEAM TURB GEN (NF)	NF) A					
ORGANIC VAP TURB GEN (NF)	NF)										
GAS TURB GEN (NF)	NF.										
RADIOISOTOPE GEN (NF)	NF)										
STEAM TURB GEN (SOLAR)	AR										
RGANIC VAP TURB GEN (SOLAR)	AR										
GAS TURB GEN (SOLAR)	AR)										

2.25

GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR) WIND TURB GEN 10-1

REQUIREMENT: 10 KW 8 HR 39-240V

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10 KW 8 Hr. DC-28V

PARAMETER

7) Environmental Constraints

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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SYSTEM	400	KAS	0	*	\$0.	+ 50	+ 40	40	4 60	3	e d
GAS TURB GEN - SC (CF)	1-	T-	10	10	•				T_	Ι-	T_
GAS TURB GEN - RC (CF)	T		1				1				Γ
DIESEL GENERATOR (CF)	1_	1_	0	0							
SPARK IGN ENG GEN(CF)	1	1	0	0		Ĭ-		-	1	1	1
FUEL CELL - PHOS ACID (CF)	+	1	1	1	1			1	+	一	广
STEAM TURB GEN - COAL(CF)	+	+	+	=	+-	-	0	-	-	=	+
STEAM TURB GEN - OIL (CF)	+	+	+	+	+	+	1	+	+	-	+
STIRLING ENG GEN(CF)	+	+	1	+	+	+		-	+	+	+
MHD GENERATOR (CF)	+-	+	10	10	10	0	10	10	-	+-	+
MHD/STEAM GEN(CF)	+	+	+	+-	+	+	+-	+	+-	+-	+-
THERMIONIC GEN(CF)	+	-	-	+	+-	+	+-	-	+		+
STEAM TURB GEN(NF)	+	-	10	10	1	0	0	0	-	-	+
ORGANIC VAP TURB GEN(NF)	+	+	+	\vdash	+	+	+-	\vdash	+	+	+
GAS TURB GEN (NF)	+	+	+	+	+	-	+	-	+-	-	+
RADIOISOTOPE GEN(NF)	+	+	+	+	+	+-	+	-	+	-	-
STEAM TURB GEN (SOLAR)	+	-	-	1	-	-	-	-	-	-	+
ORGANIC VAP TURB (SOLAR)	-	-	+	-	+	-	-	+-	-	-	+
GAS TURB GEN (SOLAR)	-		-	1	=	1-	0	-	-	0	-
PHOTOVOLTAIC (SOLAR)	-	-	-	1=	-	-	0	-	=	-	+
WIND TURB GEN (ALL)	-	-	=	1-	=	-	-	-	-	-	1
	=	-	-	-	-	-	-	-	-	-	-
FLYWHEEL STORAGE	-	-	-	-	-	-	-	-	-	-	-
BATTERY STORAGE	-	-	-	-	-	-	-	-	-	-	-

- - none

0 - minor

e - moderate

• - major

10 KW 8 Hr. 3P-240V

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

O - minor limitation

major limitation

• - overriding limitation

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SYSTEM	400	40	No	42	30	, & S	, 45°	4
GAS TURB GEN - SC (CF)	-	_	0	•	_	-	-	-
GAS TURB GEN - RC (CF)								
DIESEL GENERATOR (CF)	1	-	-	•	-	-	-	
SPARK IGN ENG GEN(CF)	-	_	-	•	-	_	_	_
FUEL CELL - PHOS ACID(CF)	1	-	-	•	-	_	_	-
STEAM TURB GEN - COAL(CF)								
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN(CF)	-	-	0	•	-	-	-	-
MHD GENERATOR (CF)	1							
MHD/STEAM GEN(CF)								
THERMIONIC GEN(CF)	0	0	0		-	-	-	-
STEAM TURB GEN(NF)								
ORGANIC VAP TURB GEN(NF)								
GAS TURB GEN(NF)								
RADIOISOTOPE GEN(NF)	-	-		1_				
STEAM TURB GEN (SOLAR)								
ORGANIC VAP TURB (SOLAR)		-	0	-			_	
GAS TURB GEN (SOLAR)	-	-	0	-	•	-	-	_
PHOTOVOLTAIC (SOLAR)	-	1-	-	1-			_	
WIND TURB GEN 10-1	_	-					-	
WIND TURB GEN 10-5	-	-	-	-	-			
WIND TURB GEN 20-1	-	1-	1_	-	1			
WIND TURB GEN 20-5	-	-	-	-	-			Ē
FLYWHEEL STORAGE								-
BATTERY STORAGE	-	0	-	-	-	-	-	•
		The same of	100000	A . T. T. T. T.			1.5	W

10 KW 8 Hr. 3P-240V

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major effect on system performance endence of capacitation and a contrate to the political
ciency to descendence of the period of the p

SYSTEM	er.	50,	De	De	04	De.	Y
GAS TURB GEN - SC (CF)	•	0	_	_	0	0	0
GAS TURB GEN - RC (CF)							
DIESEL GENERATOR (CF)	0	0	-	-	0	0	0
SPARK IGN ENG GEN(CF)	0	0	-	-	0	0	0
FUEL CELL - PHOS ACID(CF)	-	-	-	-	-	-	-
STEAM TURB GEN - COAL(CF)							
STEAM TURB GEN - OIL (CF)							
STIRLING ENG GEN(CF)	0	0	-	-	0	0	0
MHD GENERATOR (CF)							
MHD/STEAM GEN(CF)							
THERMIONIC GEN(CF)	0	0	-	-	0	0	0
STEAM TURB GEN(NF)							
ORGANIC VAP TURB GEN(NF)							
GAS TURB GEN(NF)							
RADIOISOTOPE GEN(NF)	0	0	-	-	0	0	0
STEAM TURB GEN (SOLAR)	Г						
ORGANIC VAP TURB (SOLAR)	-	0		-	0		-
GAS TURB GEN (SOLAR)	-	-		-	0	-	-
PHOTOVOLTAIC (SOLAR)	-	-		-	-	-	-
WIND TURB GEN 10-1	-	-	-	•	-	-	-
WIND TURB GEN 10-5	-	-	-		-	-	-
WIND TURB GEN 20-1	-	-	1-		-	-	-
WIND TURB GEN 20-5	-	-	-		-	-	1-
FLYWHEEL STORAGE	-	-	-	-	1-	1-	-
BATTERY STORAGE	-	-	-	1-	-	-	-

9.																	tent every existe lawny but content to helper madere effect braines blue herenous madere local
3 efficiency Percent X 10 .7					000000000000000000000000000000000000000	A) 7 6 60 C) 60		V									06 (2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
. 51	**************************************		V	V				******************************			V				Y 6 6 7 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		A) 80 A) 80 A) 77 B) 85 C) 95 A) 77 B) 85 A) 77 B) 85
	GAS TURB GEN - SCICE)	GAS TURB GEN - RC(CF)	DIESEL GENERATOR (CF)	SPARK IGN ENG GEN (CF)	FUEL CELL - PHOS ACID (CF)	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF)	MHD GENERATOR (CF)!	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) !!	STEAM TURB GEN (NF)!	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF) !!	STEAM TURB GEN (SOLAR)!	GAGANIC VAP TURB GEN (SOLAR) GAS TURB GEN (SOLAR) WIND TURB GEN 10-11 WIND TURB GEN 10-51 WIND TURB GEN 20-11 WIND TURB GEN 20-11 WIND TURB GEN 20-51

PARAMETER: 10 SYSTEM EFFICIENCY

REGUIREMENT: 10 KW 8 HR 3P-240V

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10 KW 8 HR 3P-240V

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	М
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	M
SPARK IGN ENG GEN(CF)	М
FUEL CELL - PHOS ACID(CF)	M
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	М
MHD GENERATOR (CF)	- 7
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	T
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	-8 F
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	F
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	F
BATTERY STORAGE	M

ALTERNATION NAMED IN

REQUIREMENT: 10 KW 8 HR 3P-240V

U) 77 B) 85 C) 95 U) 77 B) 85 C) 77 B) 85	26 C) 38 B L	.60000000E+02 ************************************		.6000000E+02								A) 77 8180 C185			177 8185 6190	!	
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PARAMETER

10 KW 8 Hr. 3P-240V

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System

Critical Materials

System	Critical Materials
GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	Partly modular
STEAM TURB GEN (NF)	
ORGANIC VAP TURB GEN (NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN (NF)	Not modular
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully modular

10 KW 8 Hr. 3P-240 V

PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

			THE STATE OF THE PARTY OF THE P	to se so	250	a single	or a property work	Con Street Con	Tot
SYSTEM	1.56	etone with	5.30	6. 5	5 of	togs	THOY	CT CT CS O	of .
	4	*	*	*	0	3	4	2	4
GAS TURB GEN - SC (CF)	0	•	0	-	•	0	•	-	-
GAS TURB GEN - RC (CF)	-	_		_	_		_		_
DIESEL GENERATOR (CF)	•	0	0	-	0	0	•	-	-
SPARK IGN ENG GEN(CF)	•	0	0	_	0	0	•	_	_
FUEL CELL - PHOS ACID(CF)	-	-	-	-	0	_	_	_	_
STEAM TURB GEN - COAL (CF)									
STEAM TURB GEN - OIL (CF)									
STIRLING ENG GEN(CF)	0	0	0	_	0	0	•	-	-
MHD GENERATOR (CF)									
MHD/STEAM GEN(CF)									
THERMIONIC GEN(CF)	0	•		-		0	0	-	-
STEAM TURB GEN(NF)									
ORGANIC VAP TURB GEN(NF)									
GAS TURB GEN(NF)									
RADIOISOTOPE GEN(NF)	0	0	0	0	-	0		-	_
STEAM TURB GEN (SOLAR)									
ORGANIC VAP TURB (SOLAR)	0	0	0	-	_	0	-		-
GAS TURB GEN (SOLAR)	0	0	0	-	0	0	_		-
PHOTOVOLTAIC (SOLAR)	-	0	-	-	0	-	-		-
WIND TURB GEN 10-1	0	0	•	_	0	-	-	_	•
WIND TURB GEN 10-5	0	0		-	0	_	-	-	•
WIND TURB GEN 20-1	0	0	•	-	0	-	-	-	•
WIND TURB GEN 20-5	0	0		-	0	-	-	_	
FLYWHEEL STORAGE	0	-		-	_	-		-	
BATTERY STORAGE	-	0	-	-	0	-	-	-	-

- Condition does not exist in system
- O Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists

 and is a governing
 factor in determin ing system perform ance and reliability

STEAM TURB GEN - COLL (CF) STEAM TURB GEN (CF) THERHONIC GEN (CF	A)77 8)85 C)90 A)77 A A)77 A)77 A)85 A)85		
A) 22500006-05 A) 20000000-05 A) 200000000-05 A) 2000000000-05 A) 2000000000-05 A) 2000000000-05 A) 2000000000-05 A) 2000000000000000000000000000000000	A)77 A)77 A)77 A)95 A)90		
A) A) 25 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	A) 77 A) 90 A) 90		
A) 7.77 A) 3.2500000E+05 A) .40000000E+05 A) .40000000E+05 A) .77 B) 85 C) 95 A) 77 B) 85 A) 78 B) 85 A) 86 A) 86 A) 86 A) 87 B) 88 A) 88	A) 90		
A) .4000000E-05 A) .4000000E-05 A) .4000000E-05 A) .77 B) 85 A) .78 B)	48		
A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 400000E-05 A) 4000000E-05 A) 4000000E-05 A) 400000E-05 A) 4000000E-05 A) 40000000E-05 A) 40000000E-05 A) 4000000E-05 A) 400000E-05 A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 4000000E-05 A) 400000E-05 A) 400000E-05 A) 4000000E-05 A) 400000E-05 A) 40000E-05 A) 4000E-05	18		
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FLYWHEEL STORAGE!	BATTERY STORAGE!	
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	GAS TURB GEN - SC (CF) 18	DIESEL GENERATOR (CF) 101 SPARK 16N ENG GEN (CF) 161	STEAM TURB GEN - COAL (CF) IN	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) 10	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF) 18	STEAM TURB GEN (NF)!	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF)	STEAM TURB GEN (SOLAR)!	ORGANIC VAP (URB GEN (SOLAR)	GAS TURB GEN (SOLAR)	PHOTOVOLTAIC (SOLAR)	WIND TURB GEN 10-11	WIND TURB GEN 10-51	WIND TURB GEN 20-11	WIND TURB GEN 20-51

10 KW 8 Hr. 3P-240 V

PARAMETER

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	- 4 p ×
DIESEL GENERATOR (CF)	Nana
SPARK IGN ENG GEN(CF)	None None
FUEL CELL - PHOS ACID (CF)	財産 4
STEAM TURB GEN - COAL (CF)	Platinum
STEAM TURB GEN - OIL (CF)	1 11
STIRLING ENG GEN(CF)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
MHD GENERATOR (CF)	None
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	
RADIOISOTOPE GEN(NF)	S
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	1 10 10 10 10 10 10 10 10 10 10 10 10 10
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	Possibly lead for conventional batteries
BATTERY STORAGE	None
Direction of the second of the	Possibly lead for conventional batteries

SECTION XIX

TEN KILOWATT, 1 HOUR 30

REQUIREMENT

Power Level:

10 Kw

Operating Mode:

1 hour per day

Frequency/Phase:

60 Hz/3Ø

Voltage Level:

240 V

### 10 CF A T B B C D D ### 10 CF A T B B C D ### 10 CF A T B B C D ### 10 CF A T B B C D ### 10 CF A T B B C D ### 10 CF A T B B C ### 10 CF A T B B C ### 10 CF A T B B ### 10 CF A T B ### 10 CF A T B ### 10 CF A T ### 10 CF A ### 10 CF A ### 10 CF ### 10 C			~	6.	24	1977 DOLLARS	° × • 10°	۲.	6	*	
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Forer Level 1 Mars 10 Fy Forer Level 10 Fy Cherating ede: Frequency hade Frequency hade	E. SENESATOF (CF)										
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THE KILL PROPERTY AND THE SOUTH REVIEWS TO SEE SOUT	STERM TURN GEN - OIL (CF)										
The constant of the state of th	FLING ENG GEN (CF)										
Found Town 1 Market 10 Mar	WHO GENERATOR (CF)	A) 85									
The central parents of	MHO/STEAM GEN (CF)										
Power Love Sales Frequency back Frequency back	MERMIONIC GEN (CF)		*******			***************************************	V				
Power Love: Prequency: back Prequency: back Prequency: back	STEAM TURR GEN (NF)					A) 9	•				
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Fower Level: Cperating lede: Frequency had	10150TOPE GEN (NF)	•	*******	********		***************************************	***************************************				i
Power Leads Frequency Frequency Frequency Frequency	STEAM TURR GEN (SOLAR)!	8									
A) 80 (195 (195 (195 (195 (195 (195 (195 (195	TURR GEN (SOLAR)	***************	*******	:		*************			4		
8) 85 B) 85 B) 85 B) 85 B) 85 B) 85	S TURB GEN (SOLAR)	4.						080			
A) 77 B) 85 C) 95 () 77 B) 85 () 77 B) 85 () 77 B) 85	DTOVOLTAIC (SOLAR)										
0.77 B) 85 0.77 B) 85 0.77 B) 85	IND TURB GEN 10-11	A) 77 B) 85			Da7	2580°					
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IND TURB GEN 20-510	IND TURB GEN 20-11	A) 77 B) 85									
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| A)77 8)85 | A)80 8)85 C)90 | BATTERY STORAGEID | A)77 8)85 | REQUIREMENT: 10 KW 1 HR

REQUIREMENT: 10 KM 1 HR

		8.	s.	ξ.	1.0	1977 DOLLARS	x 10 1.5	57.3	2.0	2.23
GAS TURB GEN - SC(CF) IG	91									
GAS TURB GEN - RC(CF)	1 A177 8185 C190	2000								
DIESEL GENERATOR (CF) IA	4									
SPARK IGN ENG GEN (CF)										
FUEL CELL - PHOS ACID (CF) 16	9									
STEAM TURB GEN - COAL (CF)	S C 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	580								
STEAM TURB GEN - OIL (CF)										
STIRLING ENG GEN (CF)	4									
MHD GENERATOR (CF)	56									
MHD/STEAM GEN (CF)										
THERMIONIC GEN (CF) 19000000000000000000000000000000000000			******	*						
STEAM TURB GEN (NF)		3	0614							
ORGANIC VAP TURB GEN (NF)										
GAS TURB GEN (NF)										
RADIOISOTOPE GEN (NF)	************		*******	***************************************						***************************************
STEAM TURB GEN (SOLAR)	A) .1187	0000E+08								111
ORGANIC VAP TURR GEN (SOLAR)				***********	**********	*********			:	
GAS TURB GEN (SOLAR)	4							A) 80		
PHOTOVOLTAIC (SOLAR)	A) 80									
WIND TURB GEN 10-11	A) 77 B) B5 C) 95	56()								
IND TURB GEN 10-51D	A) 77 B) 85									
WIND TURB GEN 20-110	A) 77 B) 85									
WIND TURB GEN 20-510	A) 77 B) 85									
FLYWHEEL STORAGEIG	A) 77 B) 85									
BATTERY STORAGE D	A180 8185 C190	0612								
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REQUIREMENT: 10 KM 1 HR

	•	7	.2	.3	1977 DOLLARS	8 × 10	•	9 .	•
GAS TURB GEN - SCICF) 16	(CF) 16	:							
GAS TURB GEN - RC(CF)									
DIESEL GENERATOR	(CF) A								
SPARK IGN ENG GEN	(CF) IA								
FUEL CELL - PHOS ACID	(CF) 16								
STEAM TURB GEN - COAL	(CF) !	C8 C) 01							
STEAM TURB GEN - OIL	1(40)								
STIRLING ENG GEN	(CF) IA								
MHD GENERATOR	(CF) I A) 85								
MHD/STEAM GEN	(CF.)								
THERMIONIC GEN	(CF) 00000000000000000000000000000000000		¥ *****						Sea forces
	(NF) :	V) 90							
ORGANIC VAP TURB GEN ((NF) :								
GAS TURB GEN ((NF) !								
RADIOISOTOPE GEN	NF) 1 00000000	*******	********				***************************************		
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PHOTOVOLTAIC (SOLAR) ICEB TECES TO THE TOTAL	AR) ICOBORDO	***************************************	4						
WIND TURB GEN 10-11D	0-110 0-110	A) 77 B) 85 C) 95	56()						
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WIND TURB GEN 2	20-110 1 A) 77 B) 85	5							
WIND TURB GEN 20-510	0-510								
FLYWHEEL STORAGEIG	AGEIG								
BATTERY STORAGEID	1 A) 80 8) 85 C/ 90	06 () SI					Desirable and see	Account to the second	and an extension
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REQUIREMENT: 10 KW 1 HR

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GAS TURB GEN - SC.(CF) respected to the contract of the contra							9		,	
GAS TURB GEN - RCICF)						A) 77 8) 85 C) 90	96 (C) 56			
DIESEL GENERATOR (CF) PRESENCE OF CONTROL		*******		***************************************		9	***************************************			
SPARK IGN ENG GEN (CF) I CONTROLLED CONTROLL						***************************************				
FUEL CELL - PHOS ACTO (CF)	ACID (CF) interested to the contract to the co	***************************************			9999					
STEAM TURB GEN - COAL (CF)				A) // 8/80 C) 85	50 () 00					
STEAM TURB GEN - OIL (CF)										
STIRLING ENG GEN (CF) : GEOGGEOGGEOGGEOGGEOGGEOGGEOGGEOGGEOGGEO				***************************************		1				
MHO GENERATOR (CF)					A) 85					
MHD/STEAM GEN (CF)										
THERMIONIC GEN (CF) I GEORGE GEORGE CONTROLLE		******		***************************************	•	••••••	1			
STEAM TURB GEN (NF)						A) 90				
ORGANIC VAP TURB GEN (NF)										
GAS TURB GEN (NF)										
RADIOISOTOPE GEN (NF) I GEORGEOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOG				***************************************	****					
STEAM TURB GEN (SOLAR)				A) 77						
ORGANIC VAP TURB GEN (SOLAR) I DESTRUCTION OF THE PROPERTY OF				***************************************			****			
GAS TURB GEN (SOLAR) I DECEMBER DE CONTRACTO) 80 Y	1			
PHOTOVOLTAIC (SOLAR) : # # # # # # # # # # # # # # # # # #	*******			***************************************	2000	A) 80				
A) 77 B) 85 C) 10-11 G000 G000 G000 G000 G000 G000 G00				A) 77 B)	B) 85 C) 95					
WIND TURB GEN 10-510000000000000000000000000000000000		******		A) // B) B5	0000					
WIND TURB GEN 20-11-00-8-00-00-00-00-00-00-00-00-00-00-00-0				A) 77 B) B5	0000					
MIND TURB GEN 20-5; persentatementatementatementatement ATT N. B. BS.		******		A) 77 B) B5	9888					
FLYWHEEL STORAGE: ACCORDAGE CONTROLLEGATION CO		*******								
BATTERY STORAGE: sessessessessessessessessessessessesses		***************************************			A)80 B)85 C)90	2 (1 90				
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GAS TURB GEN - SC(CF): ####################################	A) 77 B) 85 C) 90		A) 77 B) 85 C) 90	06(2 06(2				
DIESEL GENERATOR (CF): pro-producting productions and productions are productions and productions and productions are productions are productions and productions are productions are productions and productions are producti	***********							
SPARK IGN ENG GEN (CF) I TOTAL	************				*************	A) 77		1
FUEL CELL - PHOS ACID (CF)			711.1 5. 60				A) 7.7	
STEAM TURB GEN - COAL (CF)								
STEAM TURB GEN - OIL (CF)					250108454			
STIRLING ENG GEN (CF) 1998-9-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-	***************************************	***************************************	***************************************		***************************************	VIIII		
MHD GENERATOR (CF)						A) 85		
MHD/STEAM GEN (CF)			W. S.A.					
THERMIONIC GEN (CF)								
STEAM TURB GEN (NF) !								
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GAS TURB GEN (SOLAR)!								
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WIND TURB GEN 10-11	· · · · · · · · · · · · · · · · · · ·	Sec. 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	745. 676. 中国公司公司公司会会会会会	27.75				
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GAS TURB GEN - SCICF)!								
GAS TURB GEN - RCICF)								
DIESEL GENERATOR (CF)								
SPARK IGN ENG GEN (CF)!								
FUEL CELL - PHOS ACTO (CF) 16	100000000000000000000000000000000000000							
STEAM TURB GEN - COAL (CF)	A) 77 8180 C183							
STEAM TURR GEN - OIL (CF)								
STIRLING ENG GEN (CF)								
MHD GENERATOR (CF)						· control delication		
MHD/STEAM GEN (CF)								
THERMIONIC GEN (CF)						4 (No. 14 NO.		
STEAM TURB GEN (NF)!								
ORGANIC VAP TURB GEN (NF)!						and the second		
GAS TURB GEN (NF)								
RADIOISOTOPE GEN (NF) : 00000								
STEAM TURB GEN (SOLAR)!								
ORGANIC VAP TURB GEN (SOLAR)	V8000000000000000000000000000000000000	***************************************	*******					
GAS TURB GEN (SOLAR) I	************			V0000000000000000000000000000000000000				
PHOTOVOLTATE (SOLAR)	***************************************	*******	***************************************	V2000000000000000000000000000000000000				
WIND TURB GEN 10-11 DOCTOROGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGO	***************************************		0			•		
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WIND TURB GEN 20-1100000000000	V8		A) // 8) 85			5		
WIND TURB GEN 20-5: GEGGGGGGGGGGGGGG	10000000000000000000000000000000000000							
FLYWHEEL STORAGE: 00E000A	A) 77 B) B5							
BATTERY STORAGEIBBA	A) 80 8) 85 C) 90					A CONTRACTOR		
-	1 A) 77 B) 85							

REGUIREMENT: 10 KM 1 HR

PARAMETER! 48 AREA

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GAS TURB GEN - RC(CF) CF CF CF CF CF CF CF	
DIESEL GENERATOR (CF) INTERPRETATION (CF) INTE	
SPARK IGN ENG GEN (CF) DOUBTION OF THE CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STIRLING ENG GEN (CF) MHD GENERATOR (CF) MHD/STEAM GEN (CF) STEAM TURB GEN (NF) GAS TURB GEN (NF) RADIOISOTOPE GEN (NF) STEAM TURB GEN (SOLAR) GAS TURB GEN (SOLAR) STEAM TURB GEN (SOLAR) WIND TURB GEN 10-11	V
STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN (CF) MHD GENERATOR (CF) THERMIONIC GEN (CF) STEAM TURB GEN (NF) GAS TURB GEN (NF) STEAM TURB GEN (SOLAR) ORGANIC VAP TURB GEN (SOLAR) GAS TURB GEN (SOLAR) WIND TURB GEN (SOLAR) WIND TURB GEN (SOLAR)	V0000000000000000000000000000000000000
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STIRLING ENG GEN (CF) 1988 A) 85 MHD GENERATOR (CF) THERMIONIC GEN (CF) STEAM TURB GEN (NF) GAS TURB GEN (NF) STEAM TURB GEN (NF) GAS TURB GEN (SOLAR) STEAM TURB GEN (SOLAR) GAS TURB GEN (SOLAR) MIND TURB GEN (SOLAR) WIND TURB GEN (SOLAR)	
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WIND TURB GEN 10-51	
WIND TURB GEN 20-11	
WIND TURB GEN 20-51	
FLYWHEEL STORAGE!	

Supplied Street

FLYWHEEL STORAGE!

645 TURB GEN - SC(CP) 1417 5165 C199 DIESEL GEWERTOR (CP) 1417 5165 C199 SPART TURB GEN - COAL (CP) 1417 5180 C195 STEAM TURB GEN - CP (CP) 1417 5180 C195 STEAM TURB GEN (CP) 1417 5180 C195 STEAM TURB GEN (CP) 1417 5180 C195 A) 95 MMD GENERTOR (CP) 1418 GEN (CP) 1418 GEN (CP) 1418 GEN (SP) 1418 GEN (SP		.0 .25 .5 .75 1.0 1.25 1.5 1.75	2.0	2.25
A) 77 8) 80 C) 85 A	GAS TURB GEN - SCICF			1
	GAS TURB GEN - RCICF		A) 77 B	98 C) 88
	DIESEL GENERATOR (CF			
	SPARK IGN ENG BEN ICF	4) 77-00-00-00-00-00-00-00-00-00-00-00-00-0		
	FUEL CELL - PHOS ACTO (CF)		
	STEAM TURB GEN - COAL ICF			
	STEAM TURB GEN - OIL (CF			
	STIRLING ENG GEN (CF			
	MHD GENERATOR (CF			
	MHD/STEAM GEN (CF			
	THERMIONIC GEN (CF			
GAS TURB GEN (NF) STEAM TURB GEN (SOLAR) STEAM TURB GEN (SOLAR) GAS TURB GEN (SOLAR) MIND TURB GEN 10-1 WIND TURB GEN 10-1 WIND TURB GEN 20-1 WIND TURB GEN 20-1	STEAM TURB GEN INF			
GAS TURB GEN (NF): STEAM TURB GEN (SOLAR): GAS TURB GEN (SOLAR): GAS TURB GEN (SOLAR): PHOTOVOLTAIC (SOLAR): WIND TURB GEN 10-1: WIND TURB GEN 10-5: WIND TURB GEN 20-1: WIND TURB GEN 20-5:	ORGANIC VAP TURB GEN (NF			
STEAM TURB GEN (SOLAR)! SGANIC VAP TURB GEN (SOLAR)! GAS TURB GEN (SOLAR)! PHOTOVOLTAIC (SOLAR)! WIND TURB GEN 10-1! WIND TURB GEN 10-5! WIND TURB GEN 20-1! WIND TURB GEN 20-5!	GAS TURB GEN INF	ののはなる を設ける ないない 日本のののののできる しょうかい かんかん あいかん できる かんしゅう できる ないしゅう できる ないしゅう はんしゅう はんしゅう はんしゅう はんしゅう はんしゅう はんしゅう はんしゅう はんしゅう かんしゅう はんしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう		
STEAM TURB GEN (SOLAR)! RGANIC VAP TURB GEN (SOLAR)! GAS TURB GEN (SOLAR)! MIND TURB GEN 10-1! WIND TURB GEN 20-1! WIND TURB GEN 20-1!	RADIOISOTOPE GEN (NF			
AGANIC VAP TURB GEN (SOLAR)! GAS TURB GEN (SOLAR)! PHOTOVOLTAIC (SOLAR)! WIND TURB GEN 10-1! WIND TURB GEN 20-1! WIND TURB GEN 20-1!	STEAM TURB GEN (SOLAR			
GAS TURB GEN (SOLAR)! MIND TURB GEN 10-1! WIND TURB GEN 20-1! WIND TURB GEN 20-1! WIND TURB GEN 20-5!	RGANIC VAP TURB GEN (SOLAR			
MIND TURB GEN 10-11 WIND TURB GEN 20-11 WIND TURB GEN 20-11 WIND TURB GEN 20-51	GAS TURB GEN (SOLAR			
WIND TURB GEN 10-1: WIND TURB GEN 20-1: WIND TURB GEN 20-1:	PHOTOVOLTAIC (SOLAR			
WIND TURB GEN 20-1: WIND TURB GEN 20-1: WIND TURB GEN 20-5:	WIND TURB GEN 10-			
WIND TURB GEN 20-1! WIND TURB GEN 20-5!	WIND TURB GEN 10-			
WIND TURB GEN 20-5!	WIND TURB GEN 20-			
	WIND TURB GEN 20-			

REGUIREMENT: 10 KM 1 HR

	•	ñ	1.0	1.5	1977 DOLLARS/YEAR 2.0 2.5	x 10 3.0	3.5	•••
GAS TURB GEN - SCIC	.) 1 00000				GEN - SC (CF) : 000440000000000000000000000000000000		8	1
GAS TURB GEN - RCICF)							A) 77 B) B5 C) 90	06 ()
DIESEL GENERATOR (CF) I CHRISTIAN CONTROL CONTROL CONTROL	.)		**********	V				
SPARK IGN ENG GEN (CF) I STATESTATESTATESTATESTATESTATESTATESTAT	.) 04440	*******	*********	***************************************	*******************		A ******	
FUEL CELL - PHOS ACID (CF) 1000000000000000000000000000000000000		•	********	100 A 48		11.0		
STEAM TURB GEN - COAL (CF)			A) 77 B)	A) 77 B) B0 C) 85				
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN (CF)	_=.		V					
MHD GENERATOR (CF)		A) 85	v,					
MHD/STEAM GEN (CF)								
THERMIONIC BEN (C)		*******	*********	***************************************	ONIC GEN (CF) HERREGERERERERERERERERERERERERERERERERER	1		
STEAM TURB GEN (NF)					06 (¥			
ORGANIC VAP TURB GEN (NF)								
GAS TURB GEN (NF)					100000000000000000000000000000000000000			
RADIOISOTOPE GEN (NF)	-=-							
STEAM TURB GEN (SOLAR)	- <u>-</u> -							
ORGANIC VAP TURB GEN (SOLAR)			100					
GAS TURB GEN (SOLAR)								
PHOTOVOLTAIC (SOLAR)								
WIND TURB GEN 10-1	-=-			100 1182				
WIND TURB GEN 10-5	. <u>ŵ</u> .					No. 2 to 10	0.420.00	
WIND TURB GEN 20-1	=				69.4487			
WIND TURB GEN 20-5								
FLYWHEEL STORAGE GOODGOOGGOOGGOOGGOOGGOOGGOOGGOOGGOOGGOO	E 10000			A) 80 8) 85 C) 90	Charle de le monde de la Co			CAN SERVE
BATTERY STORAGE GOOGGEGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	E 1 00000		***************************************	**************************************	1.00			
					AP BED ARRE			

10 KW Cont. 1P-120 V

PARAMETER

7) Environmental Constraints

- none
- minor
- moderatc
- major

The degree of difficulty in meeting more strict environmental regulations is indicated for each of the pollution types, except for thermal discharge, where amount is shown.

Notes: (a) system is air or water cooled; heat rejected directly to atmosphere.

(b) system is water cooled; heat rejected to body of water or cooling tower. Water source and/or make-up required

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			3780	87.50						No.	as a
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SYSTEM] rice	'EL	S. S	*	40	+ 50	+ 40	A. 43	4 6	ð 8	Se de la
GAS TURB GEN - SC (CF)	+	T	T.	1	1	1	$\overline{}$	Т	T	T	1
GAS TURB GEN - RC (CF)	+-	1=	0	10		10	0		+	+	+-
DIESEL GENERATOR (CF)	+	1	1	+	1	+	+	-	+-	+	+
SPARK IGN ENG GEN(CF)	+	+	0	0	0	0	0		+-	+-	+
FUEL CELL - PHOS ACID(CF)	十	一	10	0	0	旨		+	十	+	+
STEAM TURB GEN - COAL(CF)	十	+-	-	+	+	卡	0	=	+	+	+
STEAM TURB GEN - OIL (CF)	-	+	-	+	+	-	-	+	-	+	
STIRLING ENG GEN(CF)	+	-	-	-	+	+	+	\vdash	-	+	+
MHD GENERATOR (CF)	+	+	10	10	0	0	0	0	+=-	+	+=
MHD/STEAM GEN(CF)	+		+	+		-	+	-	-	+	\vdash
THERMIONIC GEN(CF)	+	+	-	+	-	-	-	+	+		\vdash
STEAM TURB GEN(NF)	+	-	10	0	1	0	0	0	-	+	-
ORGANIC VAP TURB GEN(NF)		+	+	+	-	+	\vdash	-	+	+	+-
GAS TURB GEN(NF)	+	-	+	+	-	+	+	-		+	\vdash
RADIOISOTOPE GEN(NF)	+		\vdash	+	\vdash	+-	-	+-	+-	-	-
STEAM TURB GEN (SOLAR)	+	-	-	-	1	+	十	-	-	-	-
ORGANIC VAP TURB (SOLAR)	+	+	+	-	+	-	+	-	+	+	+-
GAS TURB GEN (SOLAR)	+	•	-	-	-	=	0	-	1	10	-
PHOTOVOLTAIC (SOLAR)	+	1	-	-	-	-	0	-	-	-	-
WIND TURB GEN (ALL)	+	-	-	-	-	-	-	-	-	+	-
FLYWHEEL STORAGE	+	-	1	-	-	-	1	-	+	-	=
BATTERY STORAGE	+	-	+	+	-	-	1	-	-	-	_

375

10 KW 1 Hr.

PARAMETER

8) Location Restraint

The locational limitations of the power system, and the degree of difficulty in overcoming these limitations are indicated in the following tabulation.

- - no limitation

o - minor limitationo - major limitation

• - overriding limitation

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	40	et x	et s	L'A	~	10t 2	es o	100
SYSTEM	40	40	40	42	5	A STATE OF	6,80	4)
GAS TURB GEN - SC (CF)	-	-	0	•	-	-	_	-
GAS TURB GEN - RC (CF)								
DIESEL GENERATOR (CF)		-	_	•	_	-	_	_
SPARK IGN ENG GEN(CF)	_6	1 - 0	-		-	-	_	_
FUEL CELL - PHOS ACID (CF)	-	-	-		-	-	_	_
STEAM TURB GEN - COAL(CF)		1						
STEAM TURB GEN - OIL (CF)								
STIRLING ENG GEN(CF)	-	-	0		-	-	-	
MHD GENERATOR (CF)								
MHD/STEAM GEN(CF)							a record	
THERMIONIC GEN(CF)	0	0	0		-	-	-	
STEAM TURB GEN(NF)	1	Ť						
ORGANIC VAP TURB GEN(NF)								
GAS TURB GEN(NF)	1							
RADIOISOTOPE GEN(NF)	1-	-						
STEAM TURB GEN (SOLAR)								Ī
ORGANIC VAP TURB (SOLAR)		1-	0	1_		1_		
GAS TURB GEN (SOLAR)	1-		0	1_		-	-	-
PHOTOVOLTAIC (SOLAR)	1-	-	1-	1-		_	-	
WIND TURB GEN 10-1	1_	-	1_	-				
WIND TURB GEN 10-5	-					-		
WIND TURB GEN 20-1	-			Ē				
WIND TURB GEN 20-5				E		-		
FLYWHEEL STORAGE			-	F			F	-
BATTERY STORAGE	1-	0	1	1	-	-	1	-
	-	1.0	1-	1-	1-		1-	1

Army Market

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10 KW 1 Hr.

PARAMETER

9) Operational Restraints

The tabulated operating characteristics are applicable to the power system as indicated

- Characteristic not observed in system operation

- Characteristic has minor effect on system performance

- Characteristic has moderate effect on system performance

- Characteristic has major

WIND TURB GEN 10-1 WIND TURB GEN 10-5 WIND TURB CEN 20-1 WIND TURB GEN 20-5 FLYWHEEL STORAGE DATTERY STORAGE

et load capacity linit at apid trement Pendence of of anachty in the pendence of of anachty in the pendence of anachty in the pendence of the pendenc Dendence of capacity response to table to the policy of the land of the sponse to the land of the land of the sponse to the land of the sponse to the land of the la

Exclered to da a partitudad a fine of a fine o t load capability little date is to be proportioned and the contract of the co Efficiency. effect on system performance SYSTEM GAS TURB GEN - SC (CF) 0 0 0 GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) 0 0 0 0 0 SPARK IGN ENG GEN-(CF) 0 0 0 0 0 FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN(CF) 0 0 0 0 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN (NF) RADIOISOTOPE GEN(NF) 0 STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) 0 GAS TURB GEN (SOLAR) PHOTOVOLTAIC (SOLAR)

Marine Committee

REGUIREMENT: 10 KM 1 HR

7. 9.																							A)80 8)85 C)90
.0 .1 .5	######################################	DIESEL GENERATOR (CF): GROOGBOODBOODBOODBOODBOODBOODBOODBOODBOODB	***************************************	A) 77 8) 80 C) 85		STIRLING ENG GEN (CF) : SEBESSESSESSESSESSESSESSESSESSESSESSES	A) 85		Y0000000000000000000000000000000000000	A) 40			RADIOISOTOPE GEN (NF) : educates accepted accepted a	A) //	Y000000	V 000000000000000000000000000000000000	08(4	1 A) 77 8) 85 C) 95 WIND TURB GEN 10-11-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	1 A) 77 B) 85	1 1 8 8 8 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A) 77 8) 85	MIND TOKIN GEN 20-51 MEGRACOPOROGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOGOG	DEBESSESSESSESSESSESSESSESSESSESSESSESSES
	GAS TURB GEN - SC(CF): ####################################	DIESEL GENERATOR (CF)	FUEL CELL - PHOS ACTO (CF) !	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) !	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)!	THERMIONIC GEN (CF) I SERRESSESSESSESSES	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)!	GAS TURB GEN (NF)!	RADIOISOTOPE GEN (NF) !	STEAM TURB GEN (SOLAR)!	ORGANIC VAP TURB GEN (SOLAR) IBBBBBBBB	GAS TURB GEN (SOLAR) : CORRECCEDE COR	PHOTOVOLTAIC (SOLAR) 10000006	WIND TURB GEN 10-119	TOPE SEN 19-51	The state of the s		TIND TORR GEN 20-51	FLYWHEEL STORAGET

10 KW 1 HR

11) Type of System

The power system types, based on USAF definitions are tabulated below. The following abbreviations are used:

M - mobile system

T - transportable system

F - fixed system

System	Type
GAS TURB GEN - SC (CF)	М
GAS TURB GEN - RC (CF)	# -
DIESEL GENERATOR (CF)	М
SPARK IGN ENG GEN(CF)	M
FUEL CEIL - PHOS ACID(CF)	М
STEAM TURB GEN - COAL (CF)	
STEAM TURB GEN - OIL (CF)	_
STIRLING ENG GEN(CF)	М
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	М
STEAM TURB GEN(NF)	-
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN(NF)	-
RADIOISOTOPE GEN(NF)	T
STEAM TURB GEN (SOLAR)	
ORGANIC VAP TURB (SOLAR)	F
GAS TURB GEN (SOLAR)	F
PHOTOVOLTAIC (SOLAR)	F
WIND TURB GEN 10-1	F
WIND TURB GEN 10-5	F
WIND TURB GEN 20-1	F
WIND TURB GEN 20-5	F
FLYWHEEL STORAGE	F
BATTERY STORAGE	М

Control Control

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	. *	•					6								1.	-	17.04	17 (A)	0 17 T	A177	0	9	10	980
GAS TURB GEN - SC(CF) 186 1 A GAS TURB GEN - RC(CF) 1	DIESEL GENERATOR (CF) IA	SPARK IGN ENG GEN (CF) IA	FUEL CELL - PHOS ACID (CF) 198	STEAM TURB GEN - COAL (CF)	STEAM TURB GEN - OIL (CF)	STIRLING ENG GEN (CF) 10A	MHD GENERATOR (CF)	MHD/STEAM GEN (CF)	THERMIONIC GEN (CF)	STEAM TURB GEN (NF)	ORGANIC VAP TURB GEN (NF)	GAS TURB GEN (NF)	RADIOISOTOPE GEN (NF) 184	STEAM TURB GEN (SOLAR)	ORGANIC VAP TURB GEN (SOLAR) 199	PHOTOVOLTATE (SOLAR) 16	TIND GEN 10-11		WIND TURB GEN 10-510	WIND TURB GEN 20-110	WIND TURB GEN 20-510	FLYWHEEL STORAGEIG	BATTERY STORAGEID	
GAS T	OTESE	SPARK	EL CELL	EAM TURB	TEAM TUR	STIRL	Ī	I	THE.	STE	RBANIC V.	9	RADIO	STEAM	VIC VAP	PHOT	•			5	-			

10 KW 1 Hr.

13) Growth Potential

The power systems are ranked below according to their growth potential, or ability to have their rated power output increased by incremental amounts. This depends on the degree of modularity of the system. A fully modular system has the most growth potential, a non-modular system has none.

System	Critical Materials
GAS TURB GEN - SC (CF)	Not modular
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	Not modular, except possibly largest requirements
SPARK IGN ENG GEN(CF)	Not modular, except possibly largest requirements
FUEL CELL - PHOS ACID(CF)	Fully modular
STEAM TURB GEN - COAL(CF)	
STEAM TURB GEN - OIL(CF)	
STIRLING ENG GEN (CF)	Not modular, except possibly largest requirements
MHD GENERATOR (CF)	A TOTAL TOTAL CONTROL CONTROL
MHD/STEAM GEN(CF)	Property April 1980 Commence of the Commence o
THERMIONIC GEN (CF)	Partly modular
STEAM TURB GEN (NF)	* 12 10 10 10 prophy for a compression of
ORGANIC VAP TURB GEN (NF)	The state of the s
GAS TURB GEN (NF)	To deliver the January
RADIOISOTOPE GEN (NF)	Not modular
STEAM TURB GEN (SOLAR)	The granted and a
ORGANIC VAP TURB (SOLAR)	Not modular
GAS TURB GEN (SOLAR)	Not modular, except possibly largest requirements
PHOTOVOLTAIC (SOLAR)	Fully modular
WIND TURB GEN 10-1	Modular for most requirements
WIND TURB GEN 10-5	Modular for most requirements
WIND TURB GEN 20-1	Modular for most requirements
WIND TURB GEN 20-5	Modular for most requirements
FLYWHEEL STORAGE	Modular for most requirements
BATTERY STORAGE	Fully modular

10 KW 1 Hr.

PARAMETER

14) Reliability/Availability

The tabulated conditions exist in the power system to the extent indicated.

Retord to the state to be to the state of th of cottos in attacting design Strick of the st Regulation of the desired SYSTEM GAS TURB GEN - SC (CF) GAS TURB GEN - RC (CF) DIESEL GENERATOR (CF) 0 0 0 SPARK IGN ENG GEN(CF) 0 0 0 0 FUEL CELL - PHOS ACID (CF) STEAM TURB GEN - COAL (CF) STEAM TURB GEN - OIL (CF) STIRLING ENG GEN(CF) 0 0 0 0 0 MHD GENERATOR (CF) MHD/STEAM GEN(CF) THERMIONIC GEN(CF) 0 0 STEAM TURB GEN(NF) ORGANIC VAP TURB GEN(NF) GAS TURB GEN(NF) RADIOISOTOPE GEN(NF) 0 0 0 STEAM TURB GEN (SOLAR) ORGANIC VAP TURB (SOLAR) 0 0 0 GAS TURB GEN (SOLAR) 0 0 0 0 PHOTOVOLTAIC (SOLAR) 0 0 WIND TURB GEN 10-1 0 0 0 WIND TURB GEN 10-5 0 0 0 WIND TURB GEN 20-1 0 0 0 WIND TURB GEN 20-5 0 0 0 FLYWHEEL STORAGE 0 BATTERY STORAGE

- Condition does not exist in system
- Condition exists, but its extent is sufficient minor as to have minimal effect on system performance or reliability
- Conditions exists, and its extent is sufficient to have a moderate effect on system performance or reliability
- Condition exists and is a governing factor in determining system performance and reliability

REQUIREMENT: 10 KW 1 HR

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GAS TURB GEN - SC (CF) 100000		
GAS TURB GEN - RCICF)	1 A)77 B)85 C)90	
DIESEL GENERATOR (CF) 194		
SPARK IGN ENG GEH (CF) 180A		
FUEL CELL - PHOS ACTO (CF) 16	1	
STEAM TURB GEN - COAL (CF)	1 A) 77 B) 80 C) 85	
STEAM TURB GEN - OIL (CF)		
STIRLING ENG GEN (CF) IA	A THE SECOND CONTRACTOR OF THE SECOND CONTRACT	
MHD GENERATOR (CF)	A 1855 PER PROPERTY OF SERVICE AND PROPERTY OF SERVICE	
MHD/STEAM GEN (CF)		
THERMIONIC GEN (CF) 100000		
STEAM TURB GEN (NF)	1 1 9 90	
ORGANIC VAP TURB GEN (NF)		
GAS TURB GEN (NF)		
RADIOISOTOPE GEN (NF) 1000000		***************************************
STEAM TURB GEN (SOLAR)!	A) .32500000E+05	N.11
ORGANIC VAP TURB GEN (SOLAR) IBRESE		
GAS TURB GEN (SOLAR) 1000000	: A) .3860000E+05	A) 80
PHOTOVOLTAIC (SOLAR) 199888		
WIND TURB GEN 10-110	1 A) 77 B) B5 C) 95	
WIND TURB GEN 10-51D	111	
MIND TURB GEN 20-110	111	
WIND TURB GEN 20-51D	11	
FLYWHEEL STORAGEIG	177 8185	
BATTERY STORAGEID		
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BATTERY STORAGE!

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GAS TURB GEN - SCICF)	45555555555555555555555555555555555555	•							
GAS TURB GEN - RC(CF)				•	0 to 60 to 10 to	3			
DIESEL GENERATOR (CF): #8649440000000000000000000000000000000000		A							
SPARK IGN ENG GEN (CF) : # CF		*********	***********	***************************************	:				
FUEL CELL - PHOS ACTO (CF)	ACID (CF) BBBBBBBCBBBD	,							
STEAM TURB GEN - COAL (CF)	11	C C							
STEAM TURR GEN - OIL (CF)									
STIRLING ENG GEN (CF)	GEN (CF) I BEBERGEBBBA								
MHO GENERATOR (CF)	1 4145								
MHD/STEAM GEN (CF)									
THERMIONIC GEN (CF)	GEN (CF) descriptions descriptions descriptions	***************************************	A ************************************						
STEAM TURB GEN (NF)			366						
ORGANIC VAP TURB GEN (NF)									
GAS TURB GEN (NF)									
RADIOISOTOPE GEN (NF)									
STEAM TURB GEN (SOLAR)									
ORGANIC VAP TURB GEN (SOLAR) I DEPRESENDENCE DEPRESENDENCE DE DEPRESENDE		***************************************		A					
GAS TURB GEN (SOLAR) ! ###################################	***************************************	A	A) 80						
	,								

2.25

PHOTOVOLTAIC (SOLAR)!

UIND TURR GEN 10-11

WIND TURR GEN 10-51

WIND TURR GEN 20-1

WIND TURB GEN 20-51 FLYWHEEL STORAGE

PARAMETER

10 KW 1 Hr.

17) Availability of Raw Building Materials

Construction materials which are critical to the power systems and are of limited supply in the United States and Free World countries are listed below.

System	Critical Materials
GAS TURB GEN - SC (CF)	None
GAS TURB GEN - RC (CF)	
DIESEL GENERATOR (CF)	None
SPARK IGN ENG GEN(CF)	None
FUEL CELL - PHOS ACID(CF)	Platinum
STEAM TURB GEN - COAL(CF)	1 1 C C A T C C C C C C C C C C C C C C C C
STEAM TURB GEN - OIL (CF)	
STIRLING ENG GEN(CF)	None
MHD GENERATOR (CF)	
MHD/STEAM GEN(CF)	
THERMIONIC GEN(CF)	None
STEAM TURB GEN(NF)	None
ORGANIC VAP TURB GEN(NF)	
GAS TURB GEN (NF)	
RADIOISOTOPE GEN(NF)	
STEAM TURB GEN (SOLAR)	None
ORGANIC VAP TURB (SOLAR)	
GAS TURB GEN (SOLAR)	None
PHOTOVOLTAIC (SOLAR)	None Possibly lead for conventional batteries
WIND TURB GEN 10-1	Possibly lead for conventional batteries
WIND TURB GEN 10-5	Possibly lead for conventional batteries
WIND TURB GEN 20-1	Possibly lead for conventional batteries
WIND TURB GEN 20-5	Possibly lead for conventional batteries
FLYWHEEL STORAGE	Parallel Control of the Control of t
BATTERY STORAGE	Possibly lead for conventional batteries